

Technical guide



VITODENS 200-W Type WB2C

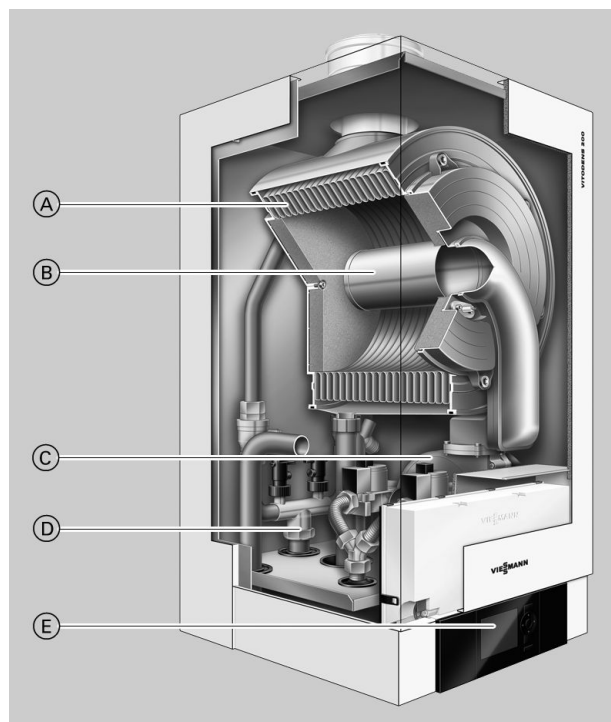
Wall mounted gas condensing boiler,
with modulating MatriX cylinder burner for natural gas and LPG
for open or balanced flue operation

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1.1 Product description



- Ⓐ Inox-Radial heat exchanger made from stainless steel – for high operational reliability and a long service life. Large heating output in the smallest of spaces
- Ⓑ Modulating MatriX cylinder burner for extremely clean combustion and quiet operation
- Ⓒ Variable speed combustion fan for quiet and economical operation
- Ⓓ Gas and water connections
- Ⓔ Digital boiler control unit

Vitodens 200-W wall mounted condensing boilers up to 105 kW are especially suitable for installation in apartment buildings and commercial or public buildings. For these, the Vitodens 200-W offers an affordable, space saving solution – either as a single unit up to 105 kW or as a cascade with up to eight boilers and a heating output up to 840 kW.

The Inox-Radial heat exchanger made from stainless steel offers high output in the tightest of spaces. This enables particularly efficient operation with standard seasonal efficiency [to DIN] up to 98 % (H_s) [gross cv]/109 % (H_i) [net cv].

The Vitotronic 300-K cascade control unit regulates up to four Vitodens 200-W as a single heating centre. In this way, the boiler output is automatically matched to the heat demand. This means that, subject to the prevailing heat demand, either one boiler modulates or all four boilers operate concurrently.

For creating cascade systems, we offer perfectly matching system components, e.g. control units with up to four appliances, fully insulated hydraulic cascades and flue gas headers.

Recommended applications

High heating output from a compact, user friendly wall mounted boiler, suitable for the following applications:

- Systems with few, large-demand consumers, e.g. fan heaters in supermarkets/markets, workshops and industrial premises, nurseries, garages and DHW heating systems
- Systems with several heating circuits for underfloor and/or static radiators in apartment buildings, central heating plants for terraced houses, office buildings and administration premises – particularly suitable for attic heating centres
- Heating of public buildings, such as sports centres and multi purpose halls, schools, kindergartens
- Suitable for installation in basement boiler rooms, on single floors or in the attic

Benefits at a glance

- Option of cascade control with up to eight boilers with a rated heating output from 45 kW to 840 kW
- Standard seasonal efficiency [to DIN] up to 98 % (H_s) [gross cv]/109 % (H_i) [net cv]

- Durable and efficient through the Inox-Radial heat exchanger
- Modulating MatriX cylinder burner with a long service life thanks to stainless steel MatriX mesh – resistant to high temperature loads
- Easy-to-operate Vitotronic control unit with plain text and graphic display
- The programming unit part of the control unit can also be fitted on a wall mounting base (accessory)
- Lambda Pro Control combustion controller for all gas types – saving costs by extending the inspection intervals up to 3 years [in Germany]
- Quiet operation through low fan speed

Delivered condition

Wall mounted gas condensing boiler with Inox-Radial heat exchanger, modulating MatriX cylinder burner for natural gas and LPG to DVGW Code of Practice G260 [Germany], plus wall mounting bracket.

Fully plumbed and wired. White epoxy-coated casing.

Packed separately:

Vitotronic 100 for constant temperature mode

or

Vitotronic 200 for weather-compensated operation.

Preset for operation with natural gas. A conversion within gas groups E/LL is not required. The conversion to LPG is made at the gas valve (a conversion kit is not required).

Multi boiler systems

Multi boiler systems for open flue operation with 2, 3 or 4 boilers.

Vitodens 200-W (cont.)

Installation with a self-supporting mounting frame in series and as a single block

Comprising:

- Hydraulic cascade
- Connection set for every boiler with:
 - Connection lines formed to suit
 - Circulation pump (3-stage or high efficiency)
 - Ball valves
 - Drain & fill valve
 - Check valve
 - Gas shut-off valve
 - Safety valve
- Thermal insulation
- Weather-compensated, digital cascade and heating circuit control unit Vitotronic 300-K

- Cascade communication module for each boiler
- Self-supporting mounting frame

Note

Order circulation pumps for heating circuits and cylinder heating separately.

Tested quality



CE designation according to current EC Directives

Meets the requirements for the "Blue Angel" certificate of environmental excellence to RAL UZ 61.

1.2 Specification

Gas boiler, series B and C, category		II _{2N3P}	II _{2N3P}	II _{2N3P}	II _{2N3P}
		Gas condensing boiler			
Rated heating output range					
45 and 60 kW: Specification to EN 677.					
80 and 105 kW: Specification to EN 15417.					
$T_V/T_R = 50/30\text{ °C}$	kW	17.0-45.0	17.0-60.0	30.0-80.0	30.0-105.0
$T_V/T_R = 80/60\text{ °C}$	kW	15.4-40.7	15.4-54.4	27.0-72.6	27.0-95.6
Rated heat input	kW	16.1-42.2	16.1-56.2	28.1-75.0	28.1-98.5
Type		WB2C	WB2C	WB2C	WB2C
Product ID		CE-0085BR0432			
IP rating		IP X4D to EN 60529			
Gas supply pressure					
Natural gas	mbar	20	20	20	20
LPG	mbar	50	50	50	50
Max. permissible gas supply pressure^{*1}					
Natural gas	mbar	25.0	25.0	25.0	25.0
LPG	mbar	57.5	57.5	57.5	57.5
Power consumption (delivered condition)	W	56	82	90	175
Weight	kg	65	65	83	83
Heat exchanger capacity	l	7.0	7.0	12.8	12.8
Max. flow rate	l/h	3500	3500	5700	5700
Limit for the use of hydraulic separation					
Rated circulation water volume at $T_V/T_R = 80/60\text{ °C}$	l/h	1748	2336	3118	4106
Permiss. operating pressure	bar	4	4	4	4
Dimensions					
Length	mm	380	380	530	530
Width	mm	480	480	480	480
Height	mm	850	850	850	850
Gas connection	R	¾	¾	1	1
Connection values					
relative to the max. load					
with gas					
Natural gas E	m³/h	4.47	5.95	7.94	10.42
Natural gas LL	m³/h	5.19	6.91	9.23	12.12
LPG	kg/h	3.30	4.39	5.88	7.74
Flue gas parameters^{*2}					
Flue gas category to G 635/G 636		G ₅₂ /G ₅₁	G ₅₂ /G ₅₁	G ₅₂ /G ₅₁	G ₅₂ /G ₅₁
Temperature (at 30 °C return temperature)					
– at rated heating output	°C	35	40	35	40
– at partial load	°C	33	35	33	35
Temperature (at 60 °C return temperature)					
	°C	65	70	65	70
Mass flow rate					
Natural gas					
– at rated heating output	kg/h	81.2	110.6	147.5	193.3
– at partial load	kg/h	31.1	31.1	55.8	55.8
LPG					
– at rated heating output	kg/h	78.2	106.7	143.8	185.4
– at partial load	kg/h	26.6	26.6	46.4	46.4
Available draught					
	Pa	250	250	250	250
	mbar	2.5	2.5	2.5	2.5
Standard seasonal efficiency [to DIN] at		up to 98 (H _s) [gross cv]/109 (H _i) [net cv]			
$T_V/T_R = 40/30\text{ °C}$	%				
Average condensate volume					
for natural gas and $T_V/T_R = 50/30\text{ °C}$	l/day	14-19	23-28	25-30	35-40
Internal diameter of the line to the expansion vessel	DN	22	22	28	28
Safety valve	DN	22	22	22	22
Condensate connection (hose nozzle)	Ø mm	20-24	20-24	20-24	20-24

^{*1} If the gas supply pressure is higher than the maximum permitted value, install a separate gas pressure governor upstream of the system.

^{*2} Calculation values for sizing the flue system to EN 13384.

Flue gas temperatures measured as gross values at 20 °C combustion air temperature.

The flue gas temperature at a return temperature of 30 °C is significant for the sizing of the flue system.

The flue gas temperature at a return temperature of 60 °C is used to determine the application range of flue pipes with maximum permissible operating temperatures.

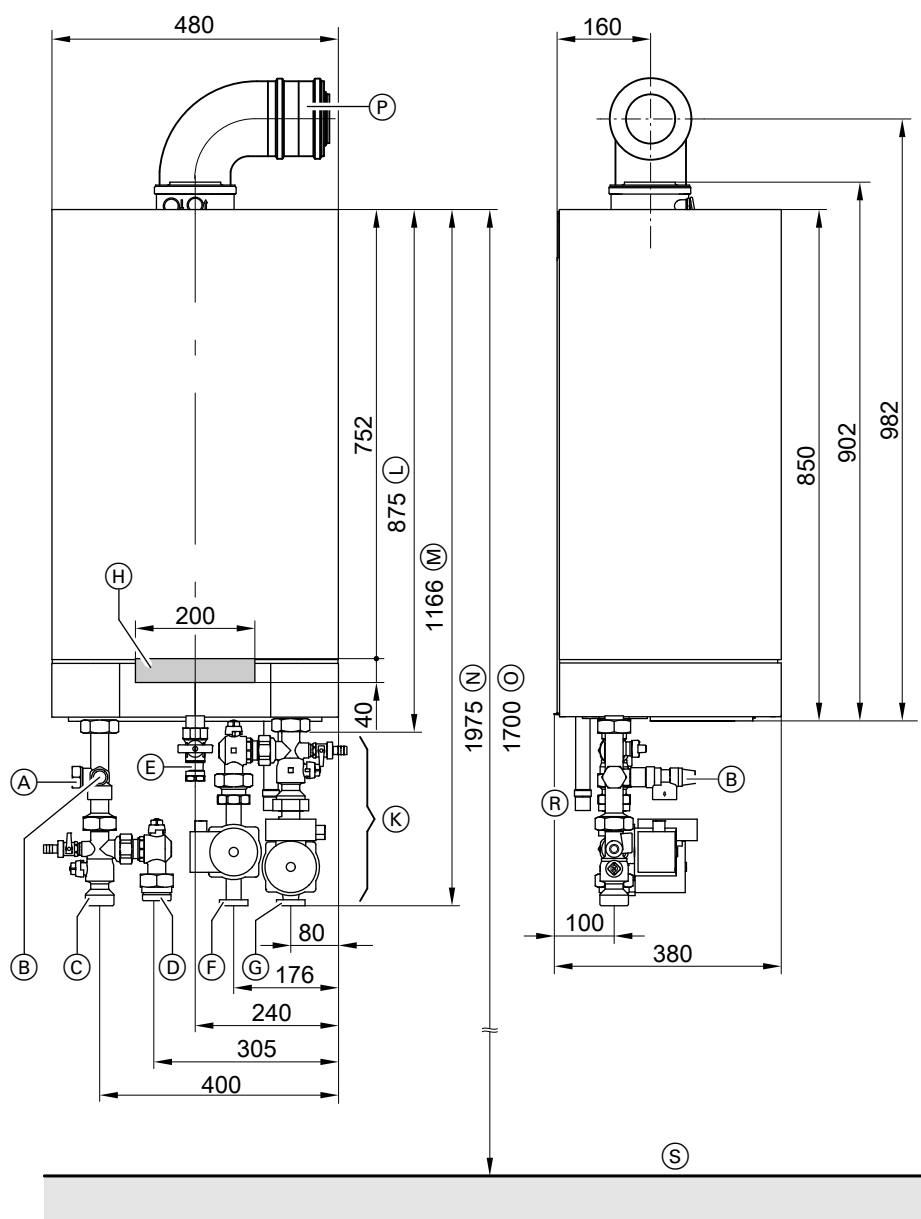
Vitodens 200-W (cont.)

Gas boiler, series B and C, category		II _{2N3P}	II _{2N3P}	II _{2N3P}	II _{2N3P}
		Gas condensing boiler			
Rated heating output range					
45 and 60 kW: Specification to EN 677.					
80 and 105 kW: Specification to EN 15417.					
$T_V/T_R = 50/30\text{ °C}$	kW	17.0-45.0	17.0-60.0	30.0-80.0	30.0-105.0
$T_V/T_R = 80/60\text{ °C}$	kW	15.4-40.7	15.4-54.4	27.0-72.6	27.0-95.6
Flue gas connection	Ø mm	80	80	100	100
Ventilation air connection	Ø mm	125	125	150	150

Vitodens 200-W, 45 and 60 kW

Multi boiler systems

For further details regarding multi boiler systems, see page 28.



- (A) Expansion vessel connection G 1
- (B) Safety valve
- (C) Heating flow G 1½
- (D) Cylinder flow G 1½
- (E) Gas connection R ¾
- (F) Cylinder return G 1½
- (G) Heating return G 1½

- (H) Cable entry area at the back
- (K) Connection sets (accessory)
Shown without thermal insulation (standard delivery, connection sets)
- (L) Without connection sets
- (M) With connection sets
- (N) Recommended dimension for a single boiler system

Vitodens 200-W (cont.)

- (O) Recommended dimension for a multi boiler system
 (P) Balanced flue connection with bend (accessory)

- (R) Condensate drain
 (S) Top edge finished floor

Note

Lay all required supply cables on site and route them into the boiler near (H).

Variable speed high efficiency circulation pump in the heating circuit connection set (accessory)

This circulation pump is a highly efficient pump with more than 50 % lower power consumption than conventional pumps. Matching the pump rate of the circulation pump to the individual system conditions reduces the power consumption of the heating system.

Variable speed (Δp constant or Δp variable), fully wired.

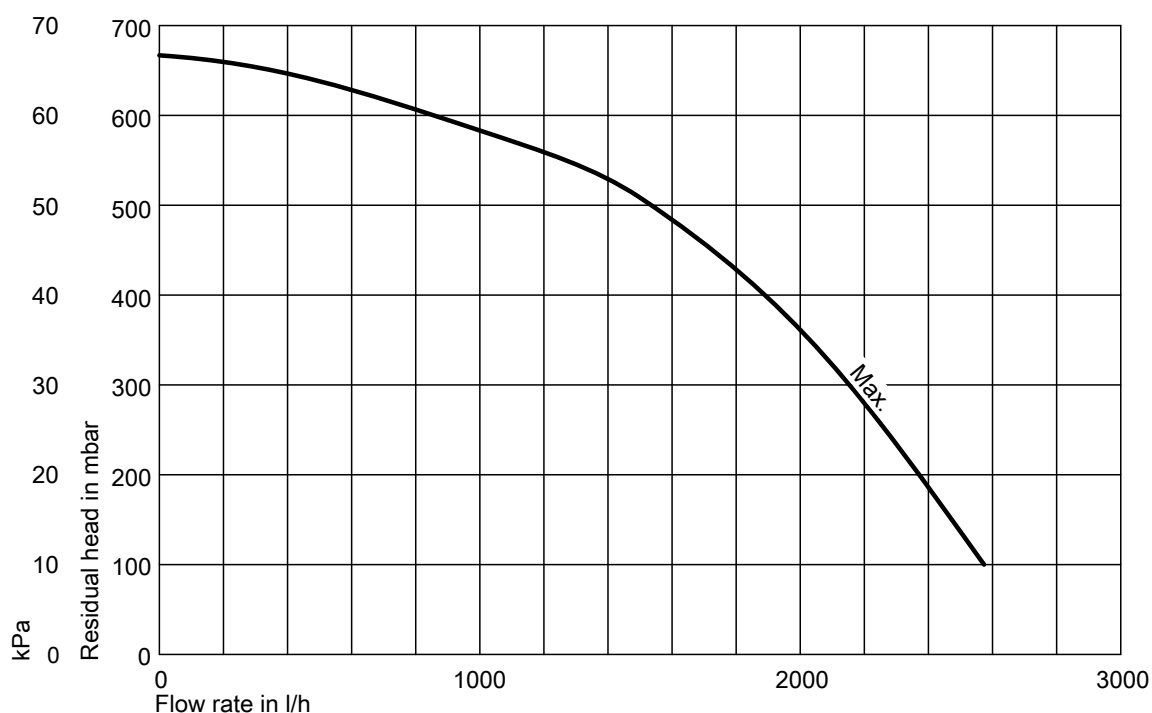
Note

When operating in multi boiler systems, select speed control Δp constant.

Circulation pump VI Para 25/1-7

Rated voltage	V~	230
Power consumption	W max.	70
	min.	5

Residual head of the circulation pump



3-speed heating circuit pump in the heating circuit connection set (accessory)

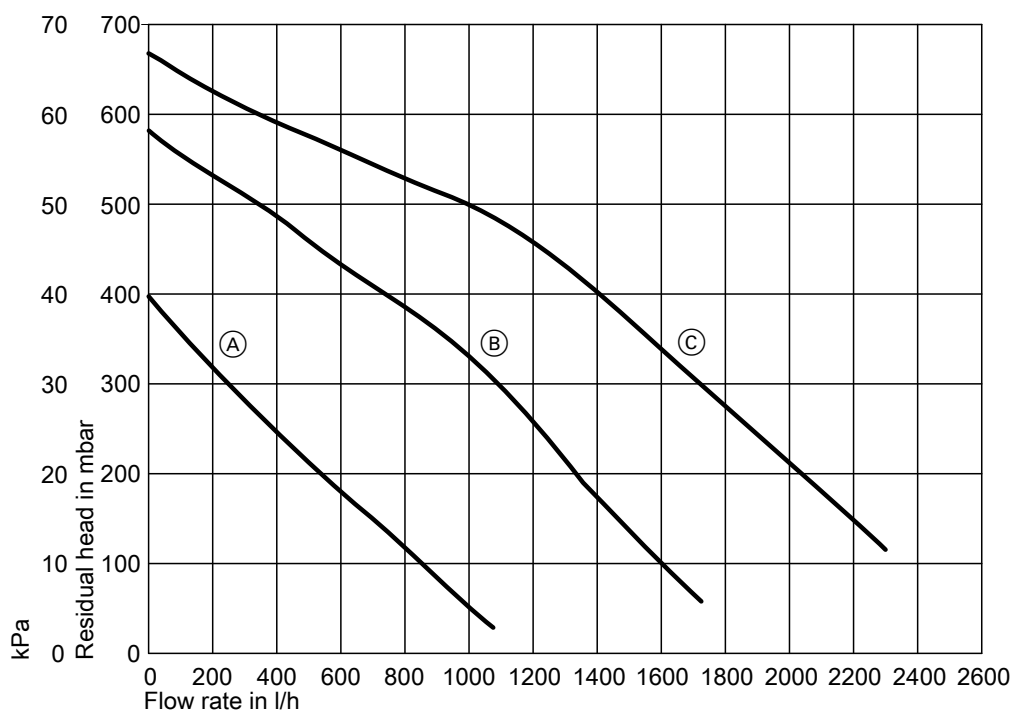
Circulation pump VIRS 25/7-3

Rated voltage	V~	230
Rated current	A max.	0.58
	min.	0.30
Capacitor	μF	3.5
Power consumption	W Stage 1	62
	Stage 2	92
	Stage 3	132

3-stage, fully wired ready, to plug in.

Vitodens 200-W (cont.)

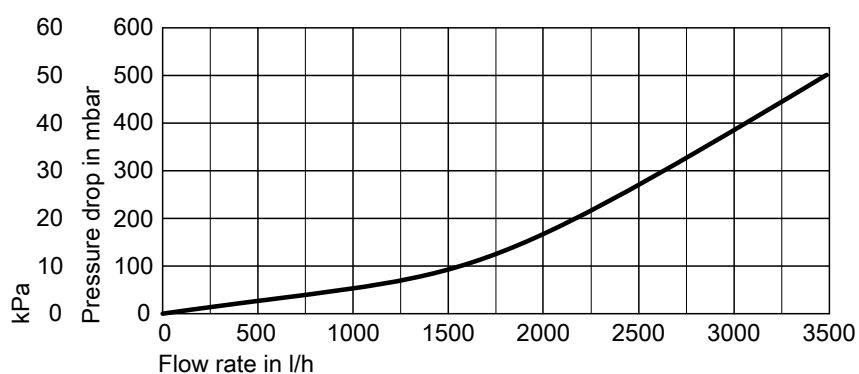
Residual head of the circulation pump



- (A) Stage 1
- (B) Stage 2
- (C) Stage 3

Pressure drop on the heating water side

For sizing an on-site circulation pump

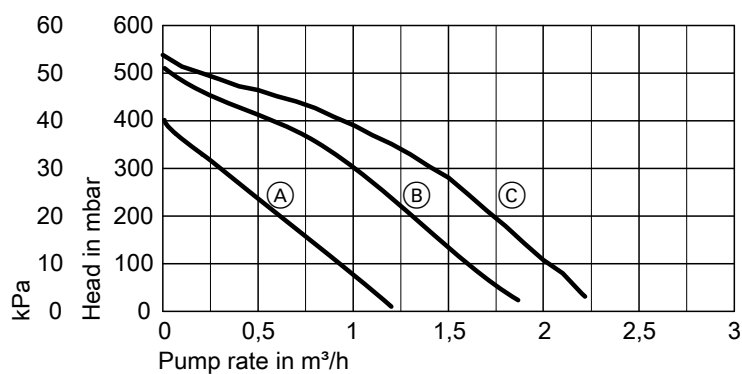


Circulation pump in the connection set for DHW cylinders

Pump type			VI RS 25/6-3
Voltage	V~		230
Power consumption	W	max.	93
		min.	46

Vitodens 200-W (cont.)

Residual head of the circulation pump

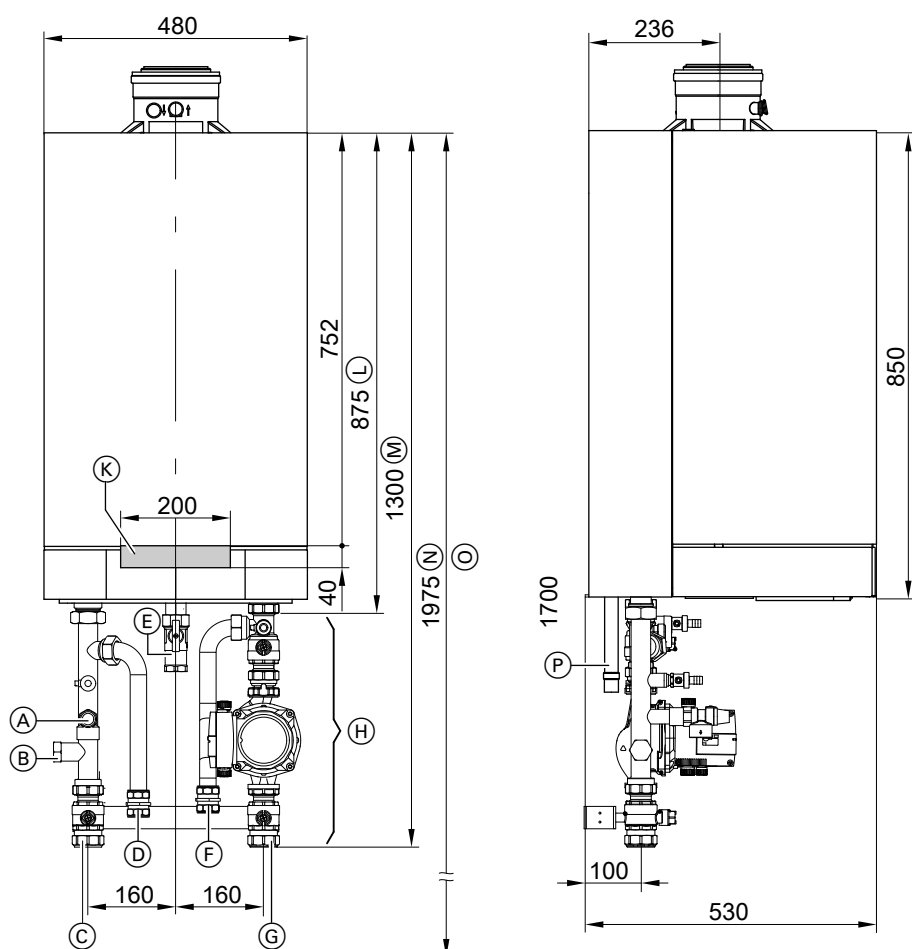


- (A) Stage 1
- (B) Stage 2
- (C) Stage 3

Vitodens 200-W, 80 and 105 kW

Multi boiler systems

For further details regarding multi boiler systems, see page 28.



- (A) Safety valve
- (B) Expansion vessel connection G1
- (C) Boiler flow \varnothing 42 mm
- (D) Cylinder flow \varnothing 35 mm
- (E) Gas connection R 1

- (F) Cylinder return \varnothing 35 mm
- (G) Boiler return \varnothing 42 mm
- (H) Connection sets (accessory)
Shown without thermal insulation (standard delivery, connection sets)

Vitodens 200-W (cont.)

- (K) Cable entry area at the back
- (L) Without connection set (accessories)
- (M) With connection set (accessories)

Note

The heating circuit connection set must be ordered separately.

- (N) Recommended dimension (single boiler system)
- (O) Recommended dimension (multi boiler system)
- (P) Condensate drain

Note

Lay all required supply cables on site and route them into the boiler near (K).

Variable speed high efficiency circulation pump in the heating circuit connection set (accessory)

This circulation pump is a highly efficient pump with more than 50 % lower power consumption than conventional pumps. Matching the pump rate of the circulation pump to the individual system conditions reduces the power consumption of the heating system.

Circulation pump VI Para 25/1-11

Rated voltage	V~	230
Power consumption	W	max. 140
		min. 7

Variable speed (Δp constant or Δp variable), fully wired.

Note

When operating in multi boiler systems, select speed control Δp constant.

Residual head of the circulation pump



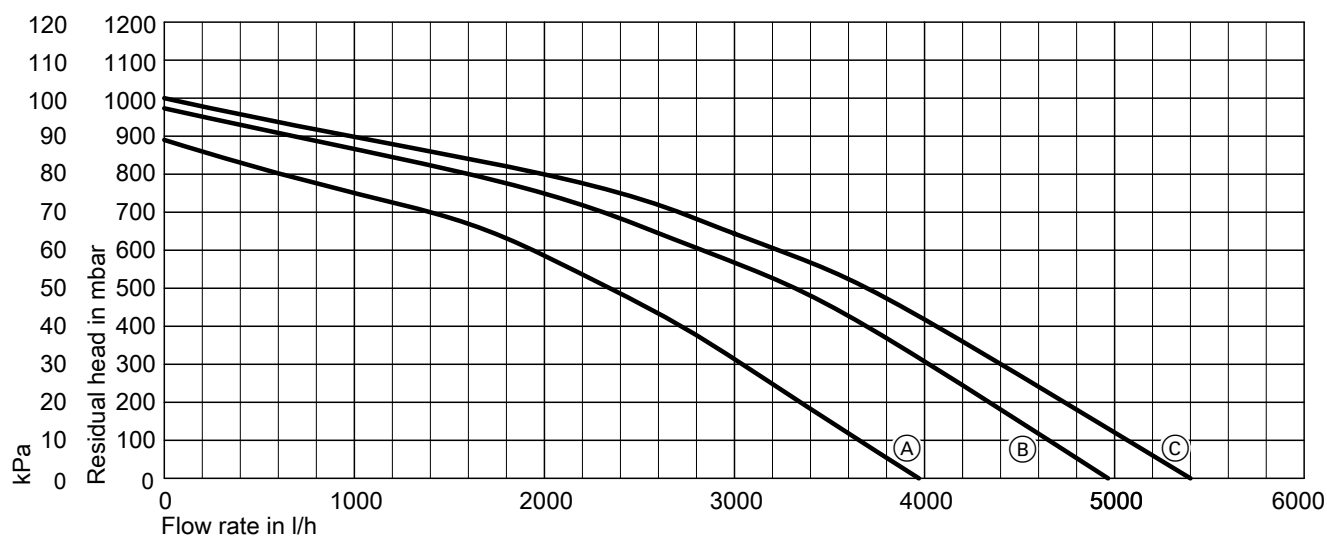
3-speed heating circuit pump in the heating circuit connection set (accessory)

Circulation pump VI UPS 25-100

Rated voltage	V~	230
Power consumption	W	Stage 1 280
		Stage 2 340
		Stage 3 345

3-stage, fully wired ready, to plug in.

Residual head of the circulation pump



- (A) Stage 1
- (B) Stage 2
- (C) Stage 3

Note

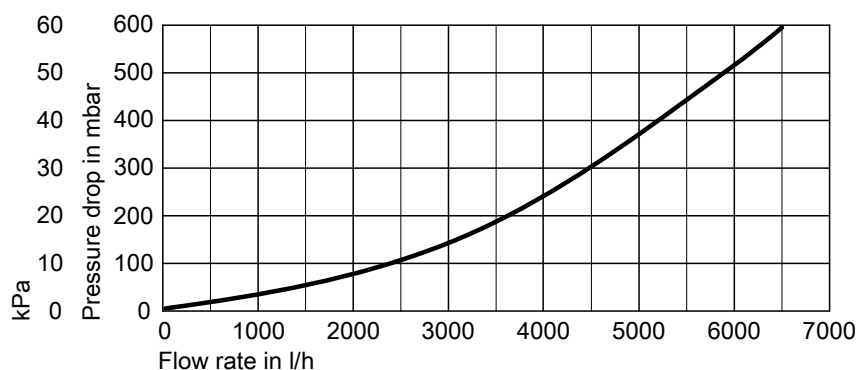
Observe further details regarding the use of a low loss header (see page 37).

If the residual head of the circulation pumps (available as accessories) is insufficient to overcome the following system pressure drop values, install an additional, external circulation pump on site.

In such cases, use a low loss header.

Pressure drop on the heating water side

For sizing a circulation pump on site (when connecting to DHW cylinder connection set)



Installation accessories

2.1 Product description

Installation accessories for the Vitodens 200-W, 45 and 60 kW

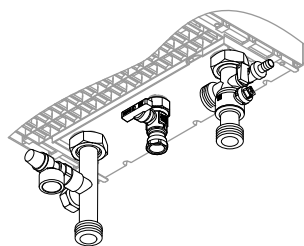
Heating circuit connection set without circulation pump

Part no. 7245 738

Connections G 1½

Comprising:

- Tee with ball valve
- Boiler drain & fill valve
- Safety valve
- Gas shut-off valve with integral thermally activated safety shut-off valve
- Connection G1 for expansion vessel



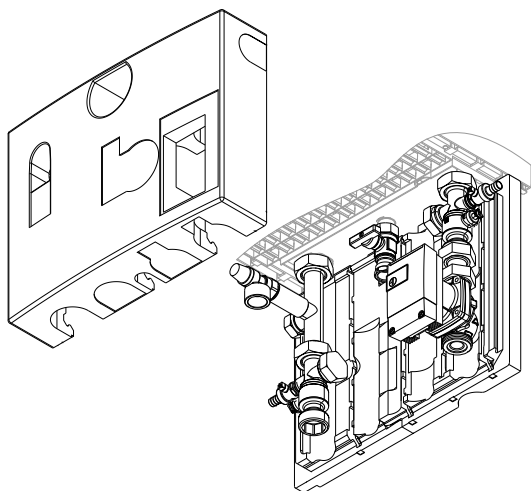
Heating circuit connection set with variable speed high efficiency circulation pump

Part no. 7424 757

Connections G 1½

Comprising:

- Circulation pump
- 2 tees with ball valve
- Non-return valve
- 2 boiler drain & fill valves
- Safety valve
- Gas shut-off valve with integral thermally activated safety shut-off valve
- Thermal insulation
- Connection G1 for expansion vessel



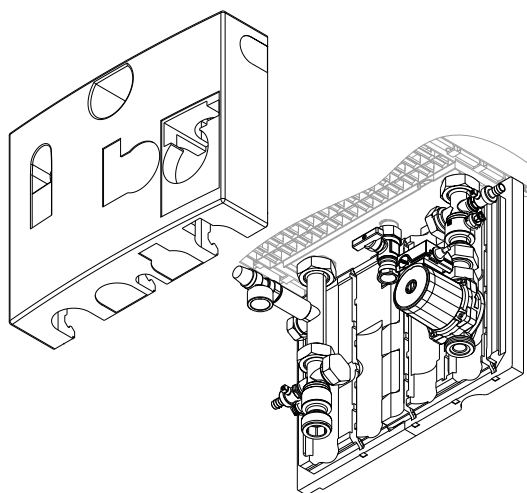
Heating circuit connection set with 3-stage circulation pump

Part no. 7247 341

Connections G 1½

Comprising:

- Circulation pump
- 2 tees with ball valve
- Non-return valve
- 2 boiler drain & fill valves
- Safety valve
- Gas shut-off valve with integral thermally activated safety shut-off valve
- Thermal insulation
- Connection G1 for expansion vessel



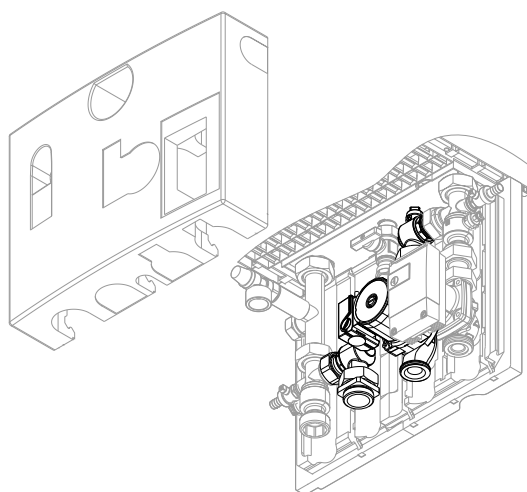
Connection set for DHW cylinders

Part no. Z006 183

Connections G 1½

Comprising:

- Circulation pump
- 2 ball shut-off valves
- Non-return valve
- Cylinder temperature sensor



Ball valve

Part no. 7247 373

1 pce G 1½ with gasket and union nut.

Divicon heating circuit distributor

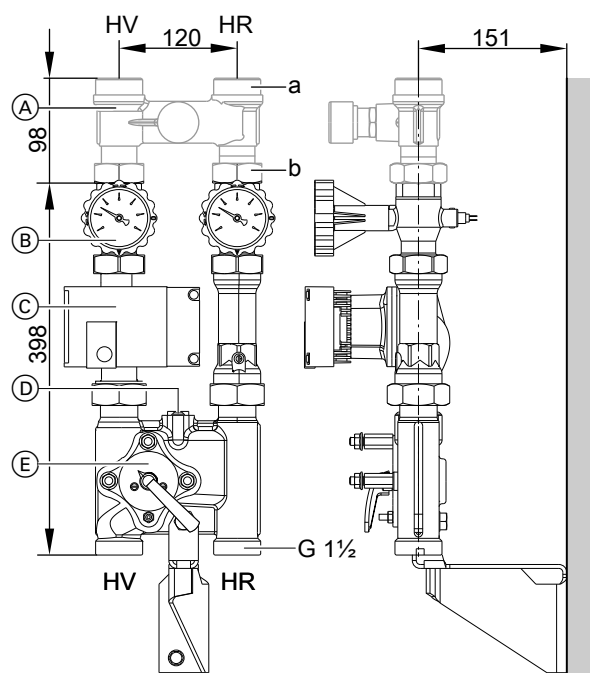
Construction and function

- Available with R ¾, R 1 and R 1½ connections.
- With heating circuit pump, check valve, ball valves with integral thermometers and 3-way mixer or without mixer.
- Quick and simple installation through pre-assembled unit and compact design.
- Low radiation losses through all-round thermal insulation shells.
- Low electricity costs and precise control characteristics through the use of high efficiency pumps and optimised mixer curve.
- Also available with staged pumps.

- The bypass valve for hydraulic balancing of the heating system is available as an accessory as a threaded component for inserting into the prepared hole in the cast body.
- The overflow valve may be required when using staged pumps to prevent the heating system running noisily. It is mounted onto the Divicon.
- Individually wall mounted or with a double or triple manifold.
- Also available as kit. For further details, see the Viessmann pricelist.

For part no. in conjunction with the different circulation pumps, see Viessmann pricelist.

The dimensions of the heating circuit distributor are the same, with or without mixer.



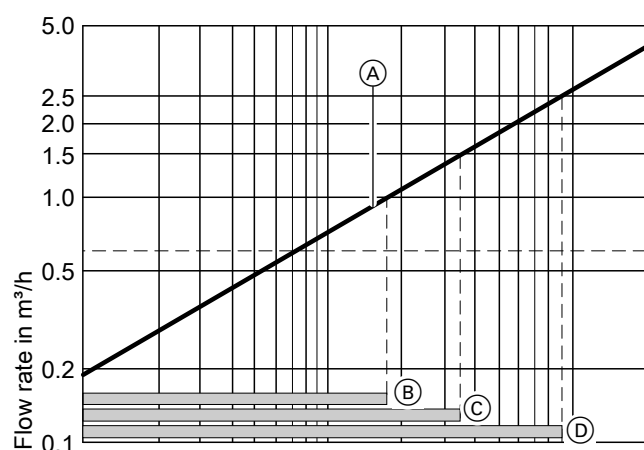
Heating circuit connection	R	¾	1	1½
Flow rate (max.)	m³/h	1.0	1.5	2.5
a (female)	Rp	¾	1	1½
a (male)	G	1½	1½	2
b (female)	Rp	¾	1	1½
b (male)	G	1½	1½	2

Divicon with mixer (wall mounting without thermal insulation and without mixer drive extension kit)

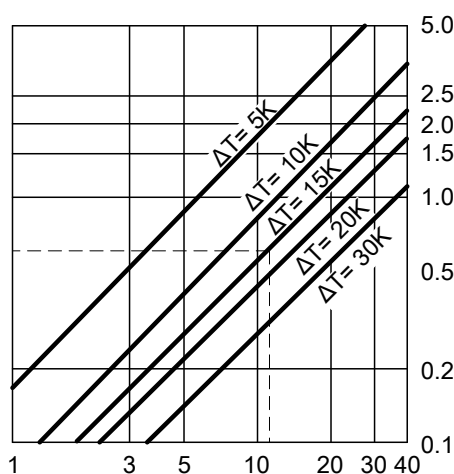
- HR Heating return
- HV Heating flow
- (A) Overflow valve (accessory for multi stage circulation pump)
- (B) Ball valves with thermometer (as programming unit)
- (C) Circulation pump
- (D) Bypass valve (accessory)
- (E) Mixer-3

2

Determining the required internal diameter



Mixer control characteristics



Heating circuit output in kW

- Ⓐ Divicon with mixer-3
The identified operating ranges Ⓑ to Ⓓ provide optimum control characteristics with the Divicon mixer:
- Ⓑ Divicon with mixer-3 (R ¾)
Application range: 0 to 1.0 m³/h

- Ⓒ Divicon with mixer-3 (R 1)
Application range: 0 to 1.5 m³/h
- Ⓓ Divicon with mixer-3 (R 1¼)
Application range: 0 to 2.5 m³/h

Example:

Heating circuit for radiators with an output of $\dot{Q} = 11.6 \text{ kW}$
Heating system temperature 75/60 °C ($\Delta T = 15 \text{ K}$)

- c Specific heat capacity
 \dot{m} Mass flow rate
 \dot{Q} Output
 \dot{V} Flow rate

$$\dot{Q} = \dot{m} \cdot c \cdot \Delta T \quad c = 1.163 \frac{\text{Wh}}{\text{kg} \cdot \text{K}} \quad \dot{m} \triangleq \dot{V} \quad (1 \text{ kg} \approx 1 \text{ dm}^3)$$

$$\dot{V} = \frac{\dot{Q}}{c \cdot \Delta T} = \frac{11600 \text{ W} \cdot \text{kg} \cdot \text{K}}{1.163 \text{ Wh} \cdot (75-60) \text{ K}} = 665 \frac{\text{kg}}{\text{h}} \triangleq 0.665 \frac{\text{m}^3}{\text{h}}$$

Select the smallest possible mixer within the application range with value \dot{V} .

Result of this example: Divicon with mixer-3 (R ¾)

Bypass valve

Part no. 7464 889

To hydraulically balance the heating circuit with mixer. Inserted into the Divicon.

Overflow valve

Part no. 7429 738: R ¾

Part no. 7429 739: R 1

Part no. 7429 740: R 1¼

Only with manually controlled heating circuit pump. Fitted onto the Divicon.

Installation accessories (cont.)

Manifold

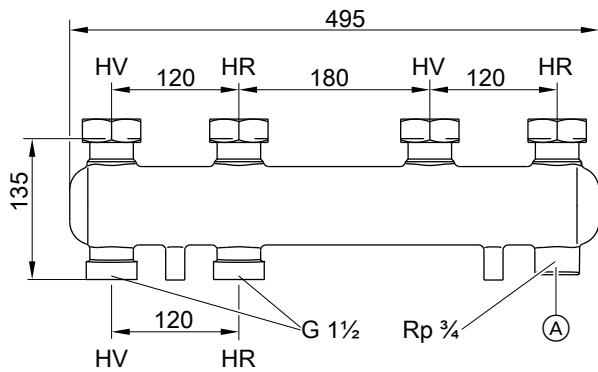
Incl. thermal insulation

Wall mounted with wall mounting bracket to be ordered separately.

The connection between boiler and manifold must be made on site.

For 2 Divicon

Part no. **7460 638** for Divicon R $\frac{3}{4}$ and R 1

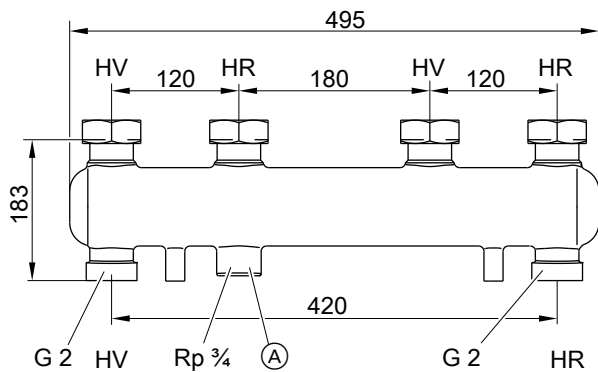


(A) Connection option for expansion vessel

HV Heating water flow

HR Heating water return

Part no. **7466 337** for Divicon R $1\frac{1}{4}$

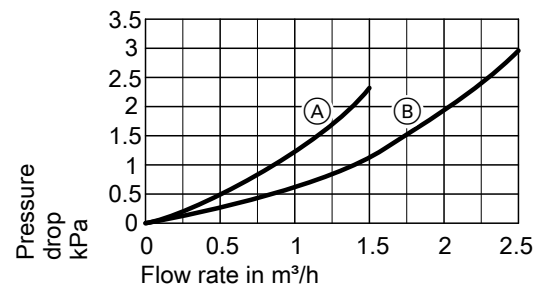


(A) Connection option for expansion vessel

HV Heating water flow

HR Heating water return

Pressure drop

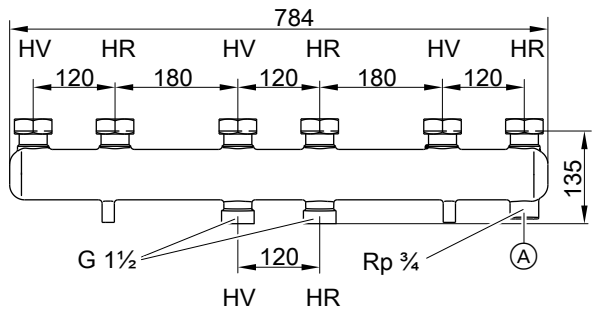


(A) Manifold for Divicon R $\frac{3}{4}$ and R 1

(B) Manifold for Divicon R $1\frac{1}{4}$

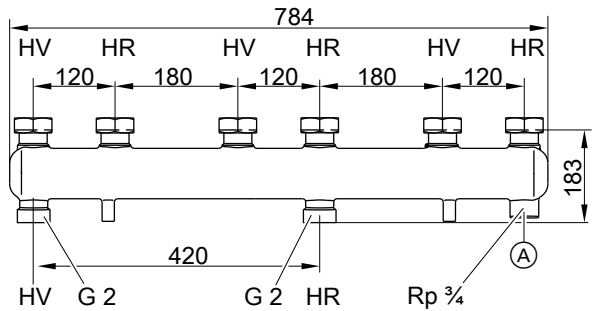
Installation accessories (cont.)

For 3 Divicon
Part no. 7460 643 for Divicon R ¾ and R 1



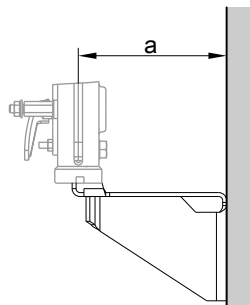
- Ⓐ Connection option for expansion vessel
- HV Heating water flow
- HR Heating water return

Part no. 7466 340 for Divicon R 1¼



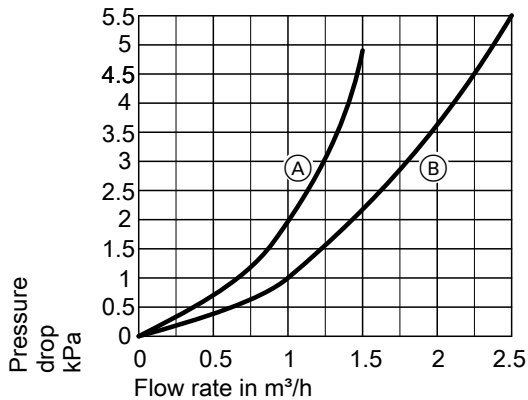
- Ⓐ Connection option for expansion vessel
- HV Heating water flow
- HR Heating water return

Wall mounting bracket
Part no. 7465 894
for individual Divicon
With screws and dowels.



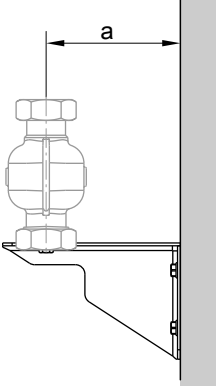
for Divicon	with mixer	without mixer
a mm	151	142

Pressure drop



- Ⓐ Manifold for Divicon R ¾ and R 1
- Ⓑ Manifold for Divicon R 1¼

Part no. 7465 439
for manifold
With screws and dowels.



for Divicon	R ¾ and R 1	R 1¼
a mm	142	167

Installation accessories (cont.)

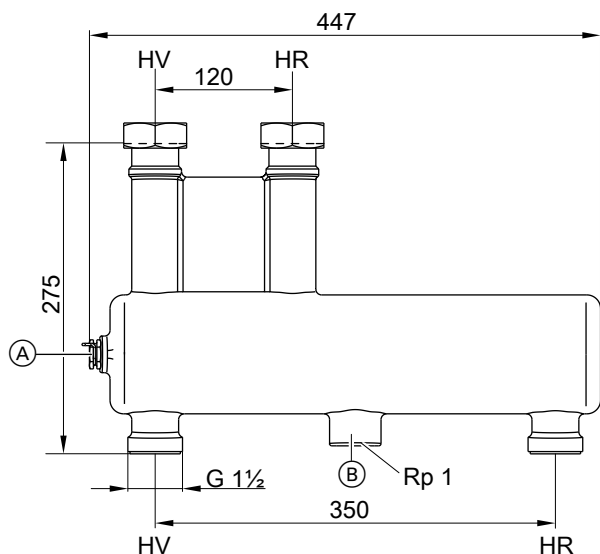
Low loss header

Part no. 7460 649

Flow rate max. 4.5 m³/h

Including thermal insulation and integral sensor well.

The connection between boiler and low loss header must be made on site.



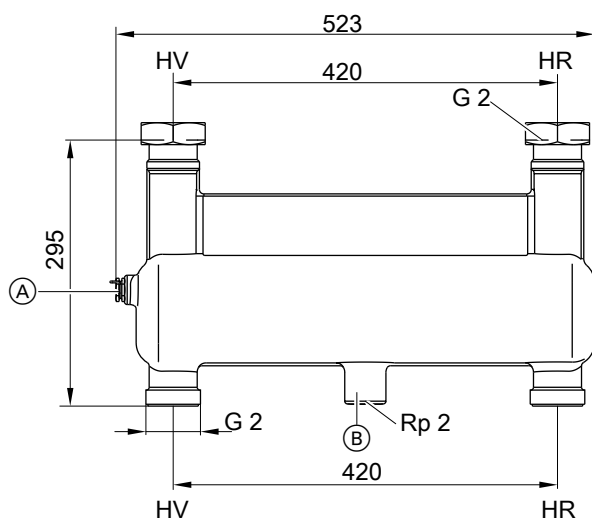
- (A) Sensor well
- (B) Optional blow-down
- HV Heating water flow
- HR Heating water return

Part no. 7460 648

Flow rate max. 7.5 m³/h

Including thermal insulation and integral sensor well.

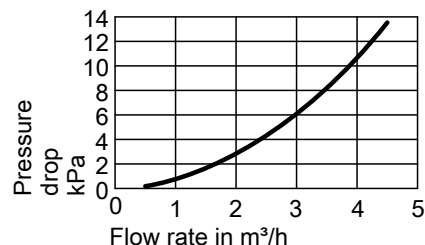
The connection between boiler and low loss header must be made on site.



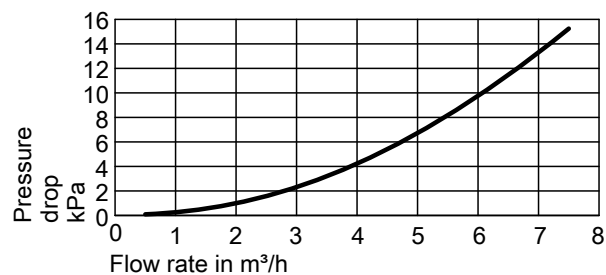
Circulation pump curves and pressure drop on the heating water side

The residual pump head results from the difference between the selected pump curve and the pressure drop curve of the respective heating circuit distributor or further components (pipe assembly, distributor etc.).

Pressure drop



Pressure drop



The following pump diagrams show the pressure drop curves of the different Divicon heating circuit distributors.

Maximum flow rate for Divicon:

Installation accessories (cont.)

- with R ¾ = 1.0 m³/h
- with R 1 = 1.5 m³/h
- with R 1¼ = 2.5 m³/h

Example:

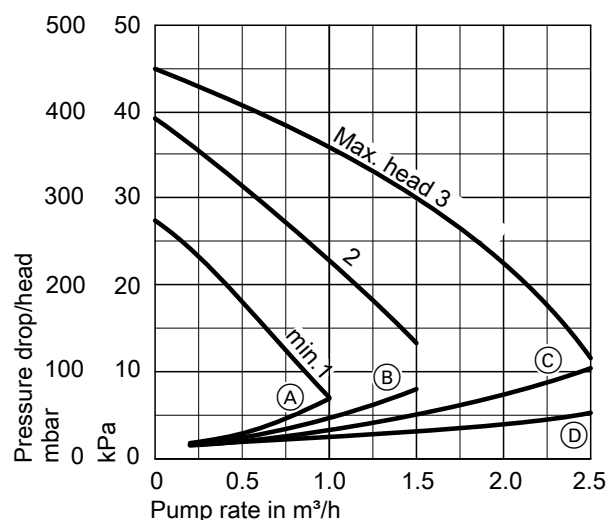
Flow rate $\dot{V} = 0.665 \text{ m}^3/\text{h}$

Selected:

Divicon with mixer R ¾ and circulation pump Wilo VIRS 25/4-3, pump curve 2, pump rate $0.7 \text{ m}^3/\text{h}$

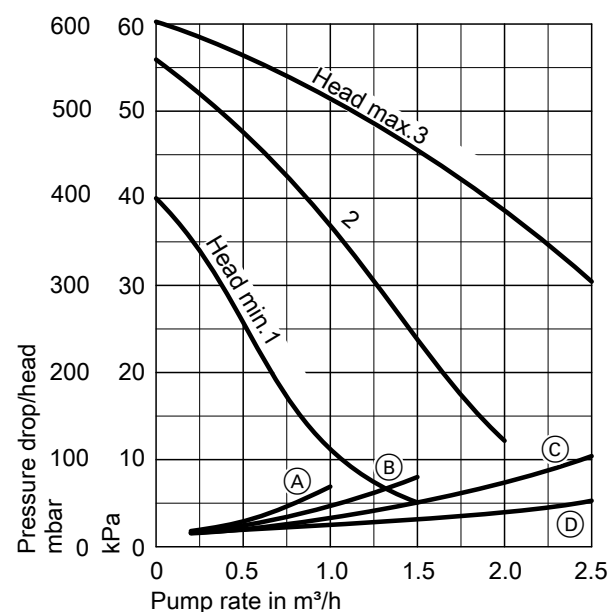
Manually controlled heating circuit pumps

Wilo VIRS 25/4-3



- (A) Divicon R ¾ with mixer
- (B) Divicon R 1 with mixer
- (C) Divicon R 1¼ with mixer
- (D) Divicon R ¾, R 1 and R 1¼ without mixer

Wilo VIRS 25/6-3



- (A) Divicon R ¾ with mixer
- (B) Divicon R 1 with mixer

Head of the relevant pump

curve: 28 kPa

Divicon pressure drop: 3.5 kPa

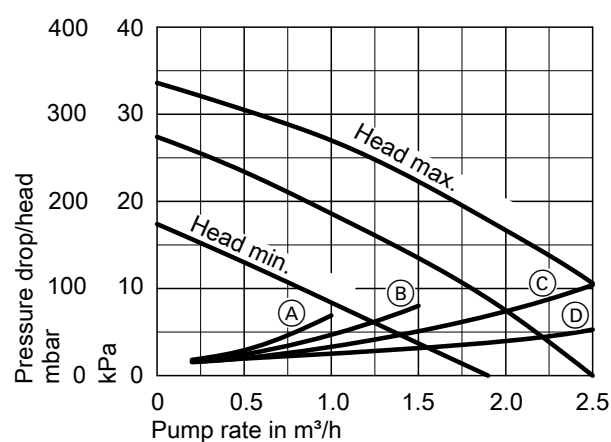
Residual head: $28 \text{ kPa} - 3.5 \text{ kPa} = 24.5 \text{ kPa}$.

Note

For further components (pipe assembly, distributor, etc.) determine the pressure drop and deduct it from the residual head.

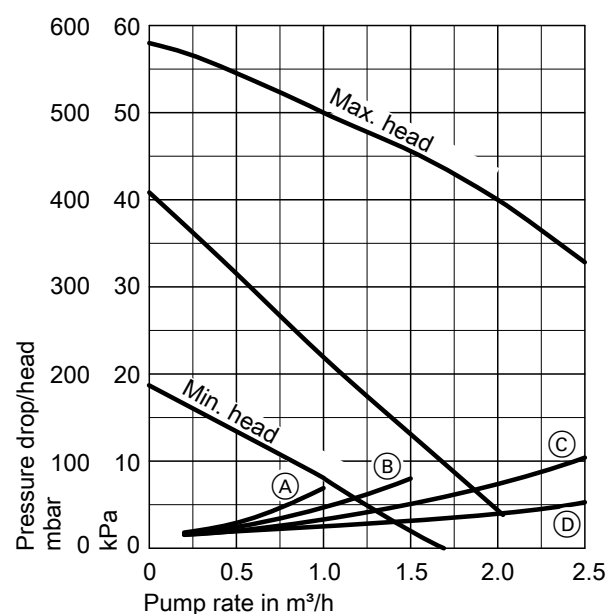
- (C) Divicon R 1¼ with mixer
- (D) Divicon R ¾, R 1 and R 1¼ without mixer

Grundfos VIUPS 25-40



- (A) Divicon R ¾ with mixer
- (B) Divicon R 1 with mixer
- (C) Divicon R 1¼ with mixer
- (D) Divicon R ¾, R 1 and R 1¼ without mixer

Grundfos VIUPS 25-60



- (A) Divicon R ¾ with mixer
- (B) Divicon R 1 with mixer

Installation accessories (cont.)

- Ⓒ Divicon R 1¼ with mixer
- Ⓓ Divicon R ¾, R 1 and R 1¼ without mixer

Heating circuit pumps regulated by differential pressure

According to the [German] Energy Savings Order (EnEV), circulation pumps in central heating systems must be sized in accordance with current technical rules. Circulation pumps in central heating systems with rated output higher than 25 kW should be equipped and designed in such a way that the power consumption will be automatically matched to the operational (capacity) requirements in at least 3 stages, if no safety concerns relating to the boiler make demands to the contrary.

In addition to the EnEV regulations, the use of regulated pumps is also recommended for smaller capacities.

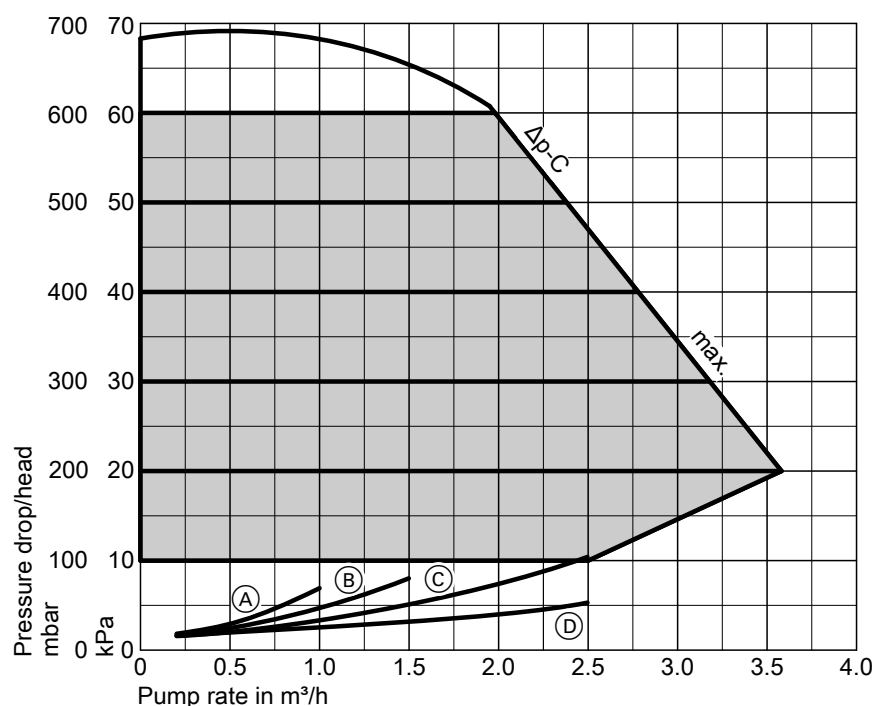
Design information

The use of differential pressure regulated heating circuit pumps requires heating circuits with variable flow rate, e.g. single line and twin-line systems with thermostatic valves, underfloor heating with thermostatic or zone valves.

Wilo Stratos Para 25/1-7

- Very economical HE pump (in accordance with Energy Label A)

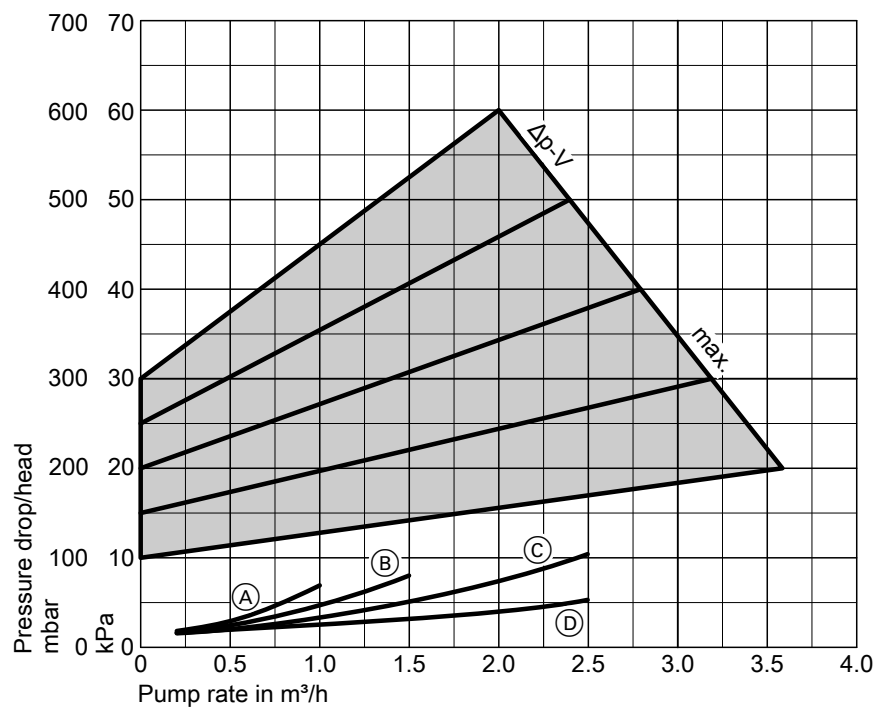
Operating mode: Constant differential pressure



- Ⓐ Divicon R ¾ with mixer
- Ⓑ Divicon R 1 with mixer

- Ⓒ Divicon R 1¼ with mixer
- Ⓓ Divicon R ¾, R 1 and R 1¼ without mixer

Operating mode: Variable differential pressure



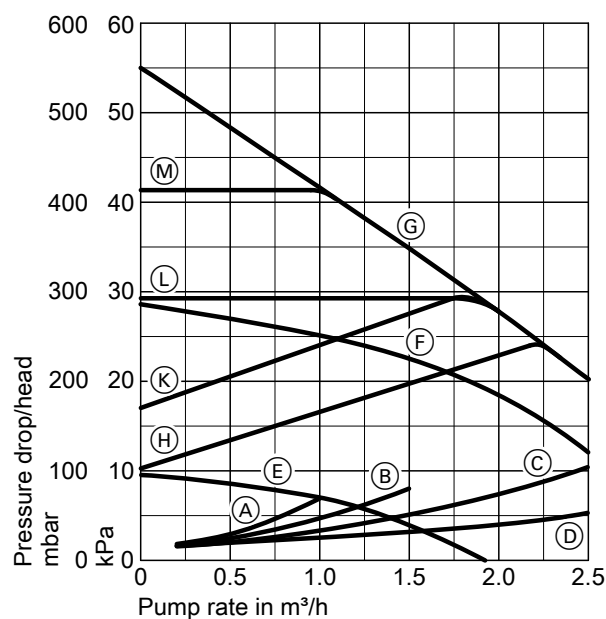
- (A) Divicon R ¾ with mixer
- (B) Divicon R 1 with mixer

- (C) Divicon R 1¼ with mixer
- (D) Divicon R ¾, R 1 and R 1¼ without mixer

Grundfos Alpha 2-60

- Very economical HE pump (in accordance with Energy Label A)
- with power consumption indication
- with Autoadapt function (automatic matching to the pipework)
- with night setback function

- (C) Divicon R 1¼ with mixer
- (D) Divicon R ¾, R 1 and R 1¼ without mixer
- (E) Stage 1
- (F) Stage 2
- (G) Stage 3
- (H) Min. proportional pressure
- (K) Max. proportional pressure
- (L) Min. constant pressure
- (M) Max. constant pressure



- (A) Divicon R ¾ with mixer
- (B) Divicon R 1 with mixer

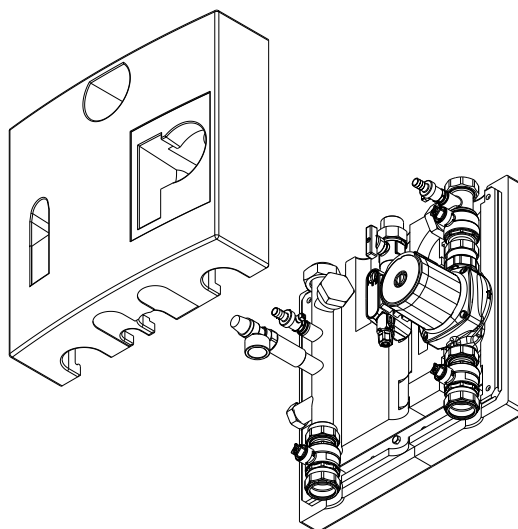
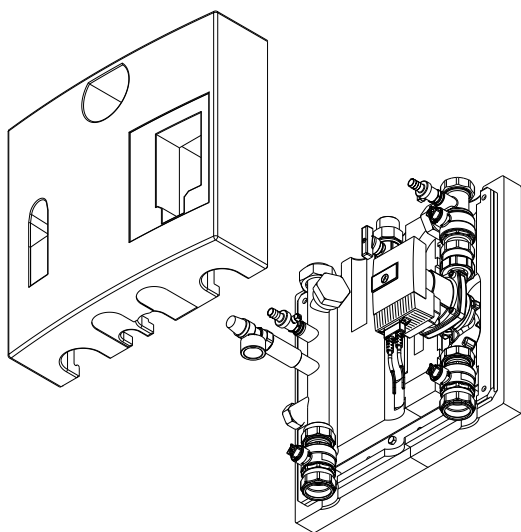
Installation accessories for the Vitodens 200-W, 80 and 105 kW

Heating circuit connection set with variable speed high efficiency circulation pump

Part no. 7424 759

Comprising:

- Circulation pump
- 2 ball valves with adaptors Ø 42 mm (locking ring fitting)
- Tee with ball valve
- Non-return valve
- Boiler drain & fill valve
- Safety valve
- Gas shut-off valve with integral thermally activated safety shut-off valve
- Thermal insulation
- Connection G1 for expansion vessel



Low loss header

For flow rate up to 8 m³/h

Part no. Z007 743

Comprising:

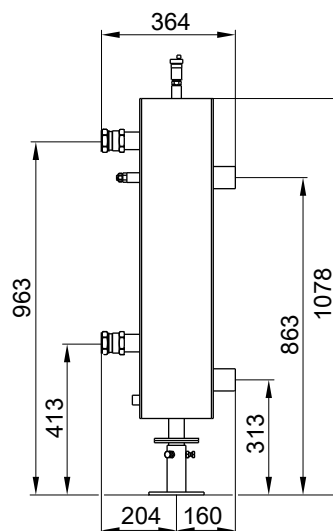
- Low loss header with integral sensor well (50 mm long)
- Thermal insulation
- Immersion temperature sensor for the low loss header
- Quick-action air vent valve
- 2 adaptors Ø 42 mm (locking ring fitting)

Heating circuit connection set with 3-stage circulation pump

Part no. 7424 951

Comprising:

- Circulation pump
- 2 ball valves with adaptors Ø 42 mm (locking ring fitting)
- Tee with ball valve
- Non-return valve
- Boiler drain & fill valve
- Safety valve
- Gas shut-off valve with integral thermally activated safety shut-off valve
- Thermal insulation
- Connection G1 for expansion vessel



Mounting panel for low loss header

- For floor mounting

Part no. 7346 787

- For wall mounting

Part no. 7346 788

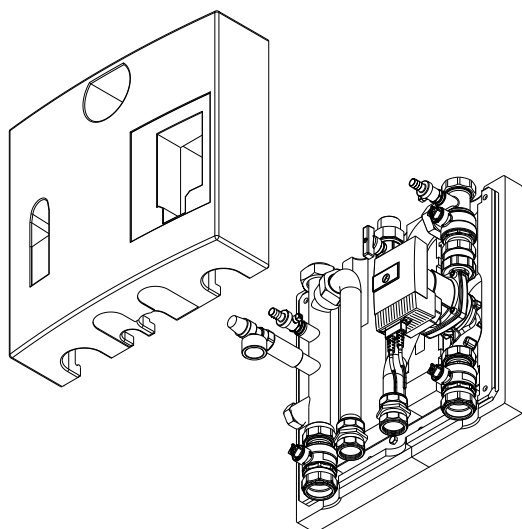
Connection set for DHW cylinders

Part no. 7348 934

Connections: Ø 35 mm (locking ring fitting)

Comprising:

- Connecting lines for flow and return
- Cylinder temperature sensor



Installation accessories for multi boiler systems

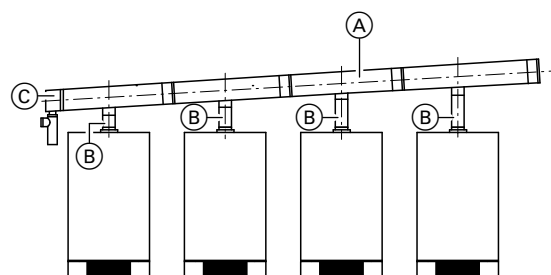
Hydraulic cascades

See page 28.

Flue gas cascade (positive pressure)

Comprising:

- Flue gas non-return device for each boiler
- Flue gas header
- End piece with condensate drain and siphon



- (A) Flue gas header
- (B) Flue gas non-return device
- (C) End piece with siphon

■ 2-boiler system installed in series

- For the Vitodens 200-W, 17 to 45 kW: **Part no. 7247 262**
- For the Vitodens 200-W, 17 to 60 kW: **Part no. 7247 262**
- For the Vitodens 200-W, 30 to 80 kW: **Part no. 7311 995**
- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7311 995**

■ 3-boiler system installed in series

- For the Vitodens 200-W, 17 to 45 kW: **Part no. 7247 263**
- For the Vitodens 200-W, 17 to 60 kW: **Part no. 7247 264**
- For the Vitodens 200-W, 30 to 80 kW: **Part no. 7311 996**
- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7311 997**

■ 4-boiler system installed in series

- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7311 998**

■ 6-boiler system installed in series

- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7452 576**

■ 8-boiler system installed in series

- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7452 577**

■ 4-boiler system installed as single block

- For the Vitodens 200-W, 17 to 45 kW: **Part no. 7454 138**
- For the Vitodens 200-W, 17 to 60 kW: **Part no. 7454 138**
- For the Vitodens 200-W, 30 to 80 kW: **Part no. 7454 139**
- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7454 139**

■ 6-boiler system installed as single block

- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7452 578**

■ 8-boiler system installed as single block

- For the Vitodens 200-W, 30 to 105 kW: **Part no. 7452 579**

For further technical details regarding the flue gas cascades, see the technical guide to Vitodens flue systems.

3.1 Product description

For details regarding DHW cylinders, see the technical guide to the Vitodens up to 35 kW, or separate datasheets.

Design information

4.1 Siting, installation

Siting conditions for open flue operation (appliance type B)

(Type B₂₃ and B₃₃)

In rooms where **air contamination through halogenated hydrocarbons** can occur, such as hairdressing salons, printing shops, chemical cleaners, laboratories, etc., install the Vitodens only as a balanced flue system.

If in doubt, please contact us.

Wall mounted boilers should not be installed in areas subject to very dusty conditions.

A ventilation air filter is available as an accessory for operation during the building phase. This protects the appliance against excessive dust loads.

The installation location must be kept free from frost and must be adequately ventilated.

Provide a condensate drain and a discharge pipe for the safety valve in the installation room.

The maximum ambient temperature of the system should not exceed 35 °C.

If these instructions are not observed, any consequential loss directly related to any of these causes is excluded from our warranty.

Vitodens 200-W from 60 kW and multi boiler systems

Install boilers from 50 kW in accordance with the Combustion Order (FeuVo) [Germany] [or local regulations] in a separate installation room. Fit the mains isolator outside the installation room.

Combustion air apertures

Gas equipment with a total rated heating output in excess of 50 kW must be provided with combustion air apertures leading to the outside. The cross-section should be at least 150 cm² and should be 2 cm² larger for each kW above 50 kW rated heating output. This cross-section may not be split over more than 2 apertures (observe FeuVo and TRGI 2008 point 5.5.4 [or local regulations]).

Example:

Vitodens 200-W, 3 × 60 kW

Total rated heating output 180 kW

150 cm² + 130 × 2 cm² = 410 cm² or 2 × 205 cm².

The combustion air vents should be at least 410 cm² or 2 × 205 cm².

Multi boiler systems with pressurised flue systems

The Vitodens 200-W multi boiler systems with common pressurised flue systems are designed for **open** flue operation (type B).

For further details, see the technical guide on flue systems for the Vitodens.

Installation room (up to 50 kW)

Permissible:

- Boiler installation on the same floor
- Adjacent rooms with interconnected room air supply (larders, basements, utility rooms, etc.)
- Attic rooms, but only with adequate minimum chimney height to DIN 18160 – 4 m above inlet (negative pressure operation).

Not permissible:

- Stairwells and common hallways; exception: Detached and two-family homes of low height (top edge of floor in the top storey < 7 m above ground level)
- Bathrooms and toilets without outside windows, with duct ventilation
- Rooms where explosive or flammable materials are stored
- Rooms ventilated mechanically or via individual duct systems to DIN 18117-1.

Observe all local fire regulations.

Connection on the flue gas side

(for further details, see the technical guide "Flue systems for the Vitodens")

The connection piece to the chimney should be as short as possible. Therefore position the Vitodens as close to the chimney as possible. No special protective measures or clearances towards combustible objects, e.g. furniture, cartons or similar, need to be taken/observed. The surface temperatures of the Vitodens and the flue system do not exceed 85 °C at any point.

Extractors

When installing appliances with extraction to the outside (cooker hoods, extractor fans etc.), ensure that air extraction will not create negative pressure inside the installation room. A return flow of flue gas could result if the ventilation system and the Vitodens were operated simultaneously. In such cases, install an **interlock circuit**.

For this, internal extension H2 (accessory) can be used. This switches the extractors off when the burner is started.

Siting conditions for balanced flue operation (appliance type C)

The Vitodens can be installed as appliance type C_{13x}, C_{33x}, C_{43x}, C_{53x}, C_{63x} or C_{83x} to TRGI 2008, for **balanced** flue operation, **independent** of the size and ventilation of the installation room.

It may, for example, be sited in recreation rooms, in other living spaces, in ancillary rooms without ventilation, in cupboards (open at the top) or recesses, without maintaining minimum clearances to combustible parts, or in attic rooms (pitched attics and the long pane of the roof) where the balanced flue pipe can be directly routed through the roof. Since the flue pipe connection for balanced flue operation is surrounded by combustion air (coaxial pipe), no clearances towards combustible parts need to be maintained (for further details, see the technical guide "Flue systems for the Vitodens").

The installation room must be free from the risk of frost.

Provide a condensate drain and a discharge pipe for the safety valve in the installation room.

Design information (cont.)

Electrical interlocks for extractors (extractor hoods, etc.) are not required with balanced flue operation.

Vitodens 200-W from 60 kW

Install boilers from 50 kW in a separate room in accordance with the Combustion Order (FeuVo) [Germany] [or local regulations]. Fit the mains isolator outside the installation room.

Appropriate ventilation air and extract air apertures are required in accordance with TRGI (see the technical guide on flue systems for the Vitodens).

Operation of the Vitodens in wet areas

The Vitodens is approved for installation in wet areas (IP rating: IP X4 D, splashproof)

Installation in a garage

Tests carried out by the Gaswärme-Institut e.V., Essen, have confirmed that the Vitodens is suitable for installation in garages.

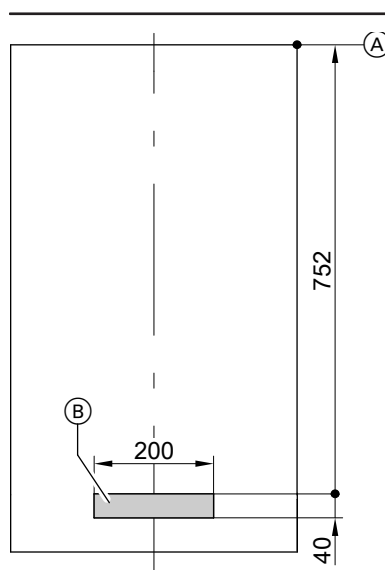
When installing this boiler in garages, maintain a clearance between the floor and the burner of at least 500 mm. Protect the boiler on site with a bracket or deflector against mechanical damage.

When installing the Vitodens in wet areas, observe the safety zones and minimum wall clearances according to VDE 0100 [or local regulations]. The Vitodens 200-W may be installed in **safety zone 1**.

Electrical connection

The power supply must comply with the requirements of your local power supply utility and current VDE [or local] regulations. Protect the power cable with a fuse with a max. rating of 16 A. We recommend installing an AC/DC-sensitive RCD (RCD class B) for DC (fault) currents that can occur with energy efficient equipment. Make the power supply (230 V~, 50 Hz) via a permanent connection. Connect the supply cables and accessories at the terminals inside the boiler.

Allow cables/leads in the shaded area to protrude at least 800 mm from the wall (see diagram):



- (A) Reference point Vitodens top edge
(B) Area for power supply cables

Recommended leads/cables

NYM 3 G 1.5 mm ²	2-core min. 0.75 mm ²	4-core 1.5 mm ² or 3-core 1.5 mm ² without green/yellow core
<ul style="list-style-type: none"> – Power cables (also for accessories) – DHW circulation pump 	<ul style="list-style-type: none"> – Extension AM1 or EA1 – Outside temperature sensor – Vitotronic 200-H (LON) – Extension kit for heating circuit with mixer (KM BUS) – Vitotrol 100, type UTDB (230 V) – Vitotrol 200A – Vitotrol 300A – Vitohome 300 – Radio clock receiver 	<ul style="list-style-type: none"> – Vitotrol 100, type UTDB-RF (230 V) – Vitotrol 100, type UTA

Interlock switch

Install an interlock for open flue operation if an extractor (e.g. cooker hood) is fitted in the room providing interconnected combustion air supply.

For this, the internal extension H2 (accessories) can be used. This switches the extractors OFF when the burner is started.

Power supply for accessories

The power supply for accessories can be connected directly to the control unit.

This connection is switched by the system ON/OFF switch.

If the total system current exceeds 6 A, connect one or more extensions via an ON/OFF switch directly to the mains supply.

Where the boiler is installed in a wet area, the power supply connection of accessories must not be made at the control unit.

Design information (cont.)

Additional requirements when installing boilers with LPG operation in rooms below ground level

According to TRF 1996 Vol. 2 – valid as of 1 September 1997 – an external safety solenoid valve is no longer required when installing the Vitodens below ground level.

Gas connection

Gas installations must only be carried out by a registered gas fitter. Connect and size the mains gas according to TRGI 2008 or TRF 1996 [or local regulations].

Max. test pressure 150 mbar.

We recommend the installation of a gas filter compliant with DIN 3386 in the gas line.

Thermally activated safety shut-off valve

According to paragraph 4, section 5 of the FeuVo 2008 [or local regulations], thermally activated shut-off equipment must be installed in gas combustion equipment or in gas lines immediately upstream of the gas combustion equipment, which will shut off the gas supply if the external temperature exceeds 100 °C. These valves must isolate the gas supply for at least 30 minutes up to a temperature of 650 °C. This should prevent the formation of explosive gas mixtures in the event of a fire.

The gas taps supplied with the Vitodens are equipped with integral thermally activated safety shut-off valves.

However, the high safety standard derived from the use of an external safety solenoid valve has proven valuable. We therefore recommend the installation of an external safety solenoid valve when installing the boiler in rooms below ground level. This requires the internal extension H1.

Sizing recommendation, gas flow limiter

In supply areas with H_{IB} below 8.6 kWh/m³ and gas appliances compliant with category I_{2N}, determine a fictitious rated heat input. This fictitious rated heat input results from the rated heat input (Q_{NB}) of the appliance, multiplied by a factor of 1.23 (ratio H_{IB} 8.6/7.0). Select the gas flow limiter and size the pipework in accordance with the TRGI 2008 [or local regulations] using this fictitious rated heat input.

Rated heating output range of the Vitodens kW	Gas flow limiter
17.0-45.0	GS 10
17.0-60.0	GS 16
30.0-80.0	GS 16
30.0-105.0	GS 16

The selection recommendation for the gas flow limiter does not waive the requirement for sizing the pipework correctly.

Minimum clearances

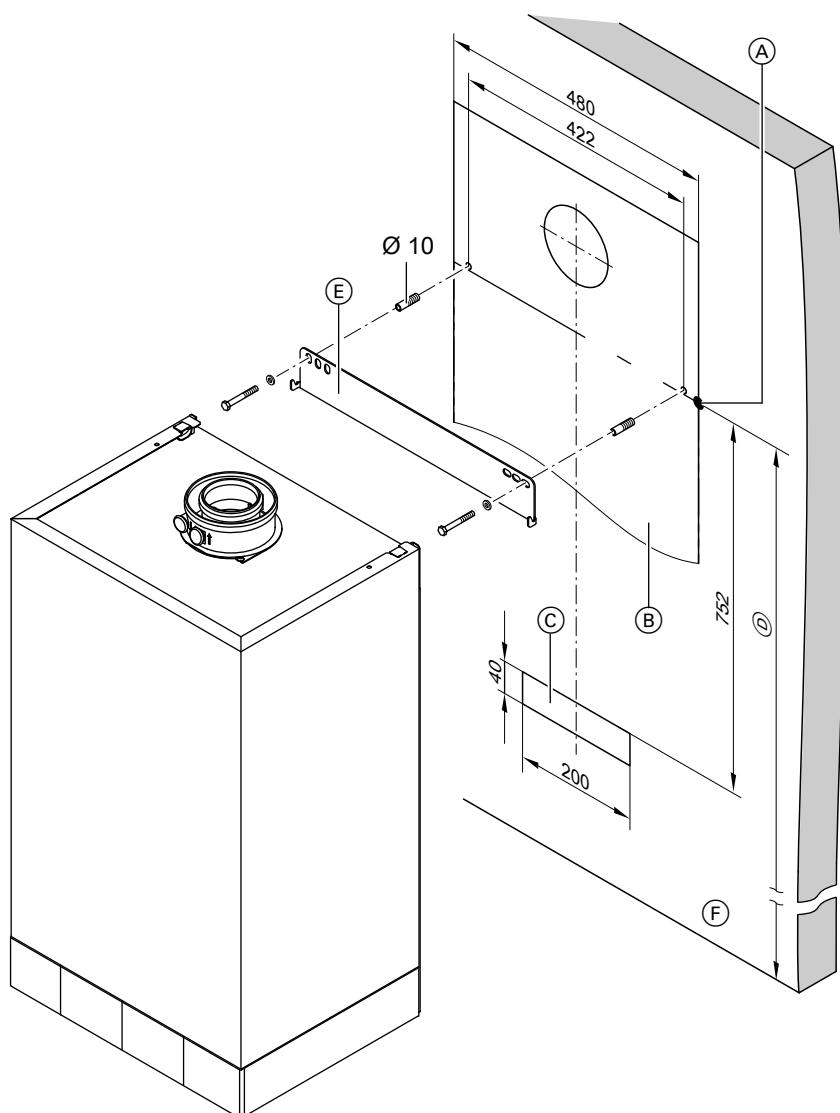
Maintain a clearance of 700 mm in front of the Vitodens or the DHW cylinder for maintenance purposes.

Maintenance clearances to the l.h. or r.h. side of the Vitodens are **not** required.

Pre-installation for installing the Vitodens 200-W directly onto a wall (single boiler)

An installation template is supplied with the Vitodens 200-W for the location of fixing holes for the wall mounting bracket and the location of the flue pipe on the wall.

Order connection sets separately for the connection of the heating circuits and one DHW cylinder.



- (A) Reference point Vitodens top edge
- (B) Installation template Vitodens
- (C) Area for supply cables.
Allow all cables/leads to protrude approx. 1200 mm from the wall.

- (D) Recommended dimension: 1975 mm
- (E) Wall mounting bracket
- (F) Top edge finished floor

Installation in front of a wall with a self-supporting mounting frame (single boiler)

The Vitodens can be mounted on the self-supporting mounting frame.

The mounting panel supplied with the boiler cannot then be used.

Pre-installation, multi boiler system

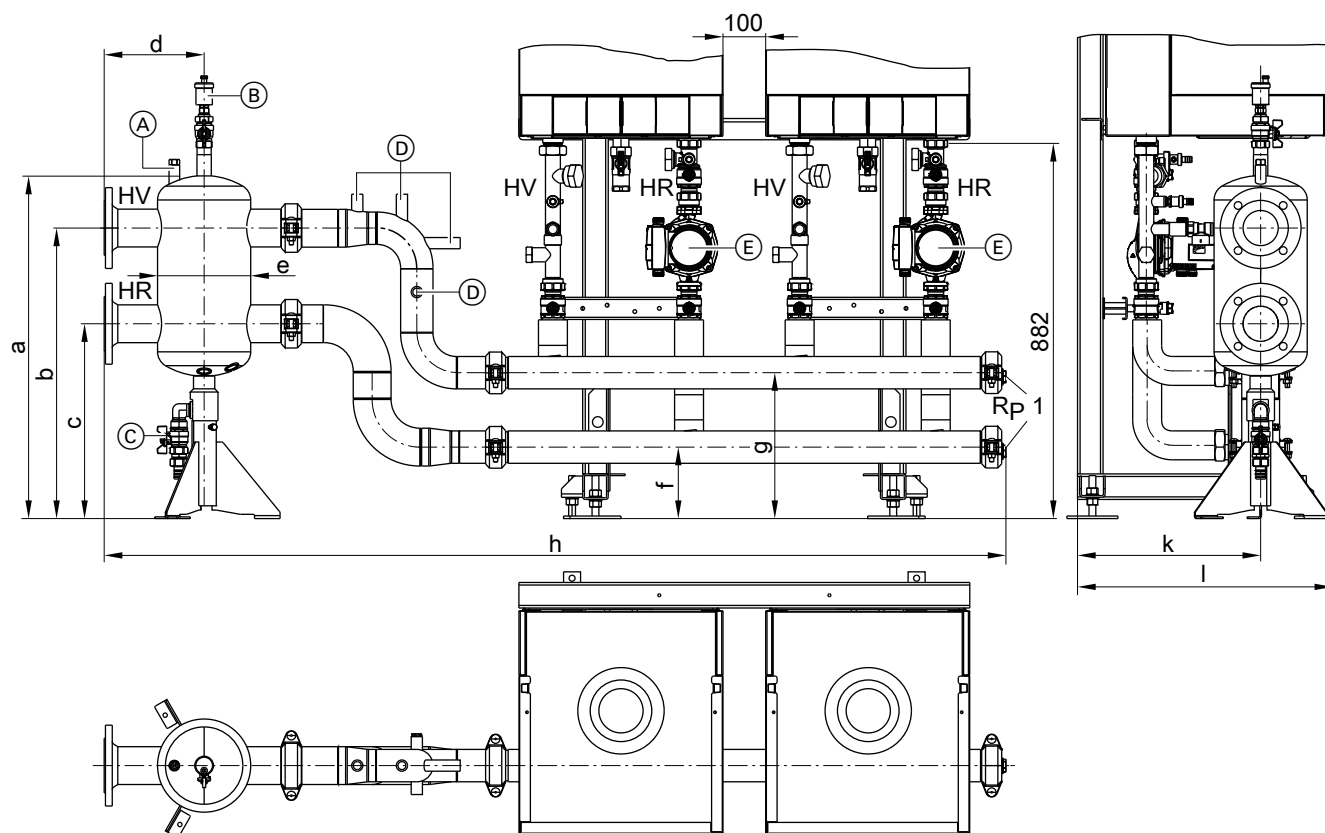
Hydraulic cascade

Flow and return collectors, optionally with low loss header, for multi boiler systems of 2 to 8 boilers in series or 4 to 8 boilers arranged in a block formation. Heating circuit connections either on the right or left.

Order the low loss header or the heating circuit connecting kit as separate accessories.

Design information (cont.)

Hydraulic cascade with low loss header



Shown without the thermal insulation supplied

- (A) Sensor well for flow temperature sensor
- (B) Air vent valve
- (C) Drain
- (D) Connectors for safety equipment Rp ½

- (E) Connection accessories with circulation pump
- HR Heating return
- HV Heating flow

Boiler	Number	2x45 kW	2x80 kW	3x45 kW	3x80 kW	4x105 kW	6x 80 kW	8x 105 kW
		2x60 kW	2x105 kW	3x60 kW	3x105 kW		6x 105 kW	
Heating circuit connection	PN4/DN	80	80	80	80	100	100	100
Boiler connection	G	1½	1½	1½	1½	1½	1½	1½
Max. flow rate	m³/h	6.9	12.1	10.3	18.1	24.1	36.2	48.2
Dimension	a mm	805	805	805	805	1044	1044	1044
	b mm	683	683	683	683	860	860	860
	c mm	458	458	458	458	520	520	520
	d mm	235	235	235	235	250	250	250
	e mm	219	219	219	219	300	300	300
	f mm	168	168	168	168	168	168	168
	g mm	343	343	343	343	343	343	343
	h mm	2110	2110	2690	2690	3491	4651	5811
	k mm	430	430	430	430	430	430	430
	l mm	595	595	595	595	595	595	595

Design information (cont.)

Boiler	Number	(2x2) 45 kW (2x2) 60 kW	(2x2) 80 kW (2x2) 105 kW	(2x3) 80 kW (2x3) 105 kW	(2x4) 105 kW
Heating circuit connection	PN4/DN	80	100	100	100
Boiler connection	G	1½	1½	1½	1½
Max. flow rate	m³/h	13.8	24.1	36.2	48.2
Dimension	a mm	805	1044	1044	1044
	b mm	683	860	860	860
	c mm	458	520	520	520
	d mm	235	250	250	250
	e mm	219	300	300	300
	f mm	168	168	168	168
	g mm	343	343	343	343
	h mm	2112	2331	2911	3491
	k mm	—	—	—	—
	l mm	—	—	—	—

Low loss header

■ DN 80

For installing 2- and 3-boiler systems in series up to 315 kW and 4-boiler systems in block formation up to 240 kW.

Part no. Z010 305

■ DN 100

For installing 4- and 6-boiler systems in series up to 480 kW and 4-boiler systems in block formation up to 420 kW.

Part no. Z010 306

■ DN 100

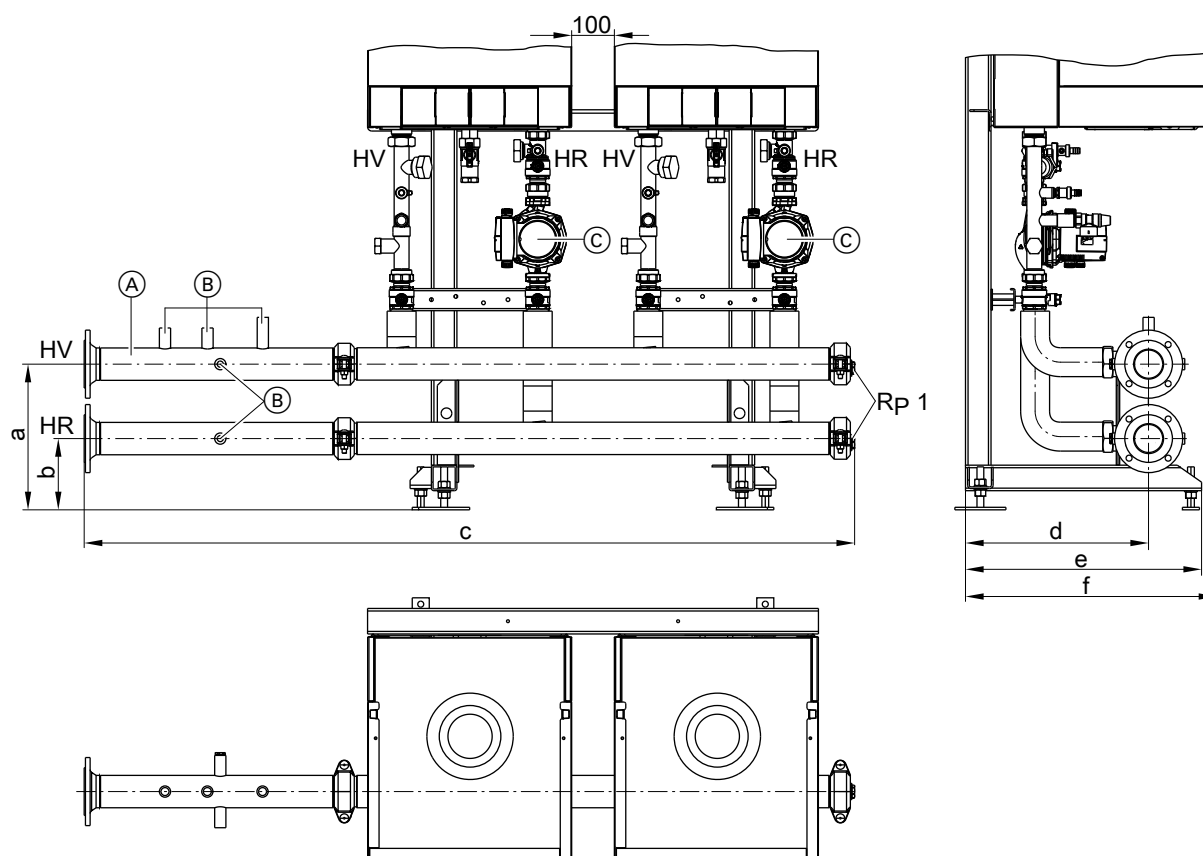
For installing 6- and 8-boiler systems in series up to 630 kW, and 6- and 8-boiler systems in block formation up to 480 kW.

Part no. Z010 307

Comprising:

- Low loss header with integral sensor well
- Thermal insulation
- Connection lines for hydraulic cascades with Rp ½ connections for safety and control equipment
- Air vent valve
- Drain valve

Hydraulic cascade without low loss header



Shown without the thermal insulation supplied

- (A) Heating circuit connecting kit
- (B) Connectors for safety equipment Rp ½

- (C) Connection accessories with circulation pump

Design information (cont.)

HR Heating return
HV Heating flow

Boiler	Number	2x45 kW 2x60 kW	2x80 kW 2x105 kW	3x45 kW 3x60 kW	3x80 kW 3x105 kW	4x105 kW	6x 80 kW 6x 105 kW	8x 105 kW
Heating circuit connection	PN4/DN	65	65	65	65	80	100	100
Boiler connection	G	1½	1½	1½	1½	1½	1½	1½
Max. flow rate	m³/h	6.9	12.1	10.3	18.1	24.1	36.2	48.2
Dimension	a mm	343	343	343	343	343	343	343
	b mm	168	168	168	168	168	168	168
	c mm	2110	2331	2690	2690	3491	4651	5811
	d mm	430	430	430	430	430	430	430
	e mm	555	555	555	555	555	555	555
	f mm	440	590	440	590	590	590	590

Boiler	Number	(2x2) 45 kW (2x2) 60 kW	(2x2) 80 kW (2x2) 105 kW	(2x3) 80 kW (2x3) 105 kW	(2x4) 105 kW
Heating circuit connection	PN4/DN	80	100	100	100
Boiler connection	G	1½	1½	1½	1½
Max. flow rate	m³/h	13.8	24.1	36.2	48.2
Dimension	a mm	343	343	343	343
	b mm	168	168	168	168
	c mm	2110	2331	2911	3491
	d mm	—	—	—	—
	e mm	—	—	—	—
	f mm	—	—	—	—

Heating circuit connecting kit

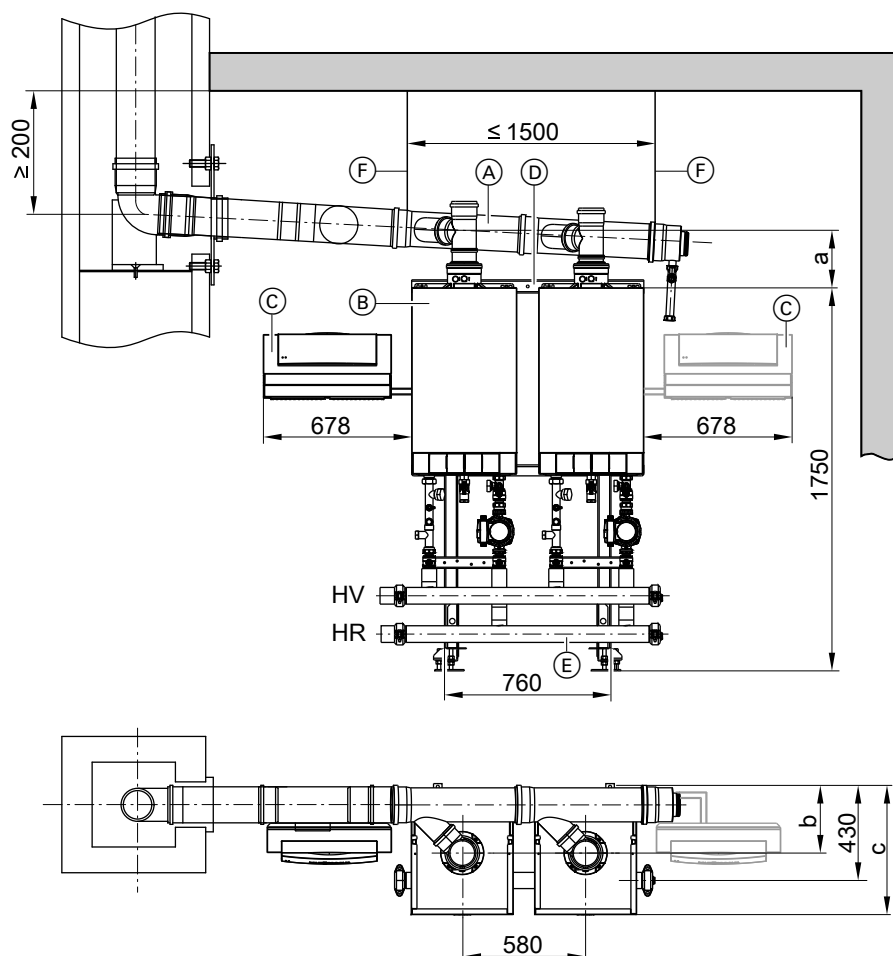
- DN 65
For installation in series of 2- and 3-boiler systems up to 315 kW.
Part no. 7453 093
- DN 80
For installing 4- and 6-boiler systems in series up to 480 kW and 4-boiler systems in block formation up to 420 kW.
Part no. 7453 094
- DN 100
For installing 6- and 8-boiler systems in series up to 630 kW, and 6- and 8-boiler systems in block formation up to 480 kW.
Part no. 7453 095

Comprising:

- Connection lines for hydraulic cascades with Rp ½ connections for safety and control equipment
- Thermal insulation

Design information (cont.)

Installation in series with flue gas cascade



Shown without the thermal insulation supplied

- | | |
|--|---|
| (A) Flue gas cascade | (D) Self-supporting mounting frame |
| (B) Vitodens | (E) Hydraulic cascade |
| (C) Vitotronic 300-K (can be fitted either to the left or the right)
The total length of all BUS cables (on site) should not exceed 50 m. | (F) Flue gas cascade mounted on the ceiling |
| | HR Heating return |
| | HV Heating flow |

Note

Secure the flue gas cascade with suitable means.
Suspension from the ceiling is recommended. Observe the max. distance between fixing points (F).

For details regarding the flue gas cascade, see page 24 and the technical guide on flue systems.
For further details regarding the hydraulic cascade, see page 28.

Number of boilers		2x45 kW 2x60 kW	2x80 kW 2x105 kW	3x45 kW 3x60 kW	3x80 kW 3x105 kW	4x105 kW	6x80 kW 6x105 kW	8x105 kW
a	mm	176	176	207	207	237	387	447
b	mm	301	323	301	323	366	406	406
c	mm	595	595	595	595	656	696	696

Multi boiler system standard delivery

- Vitodens 200-W (2 to 8 boilers)
- Additional boiler coding card for multi boiler system
- Vitotronic 300-K cascade control unit
- Cascade communication module for each boiler
- Immersion temperature sensor
- Self-supporting mounting frame

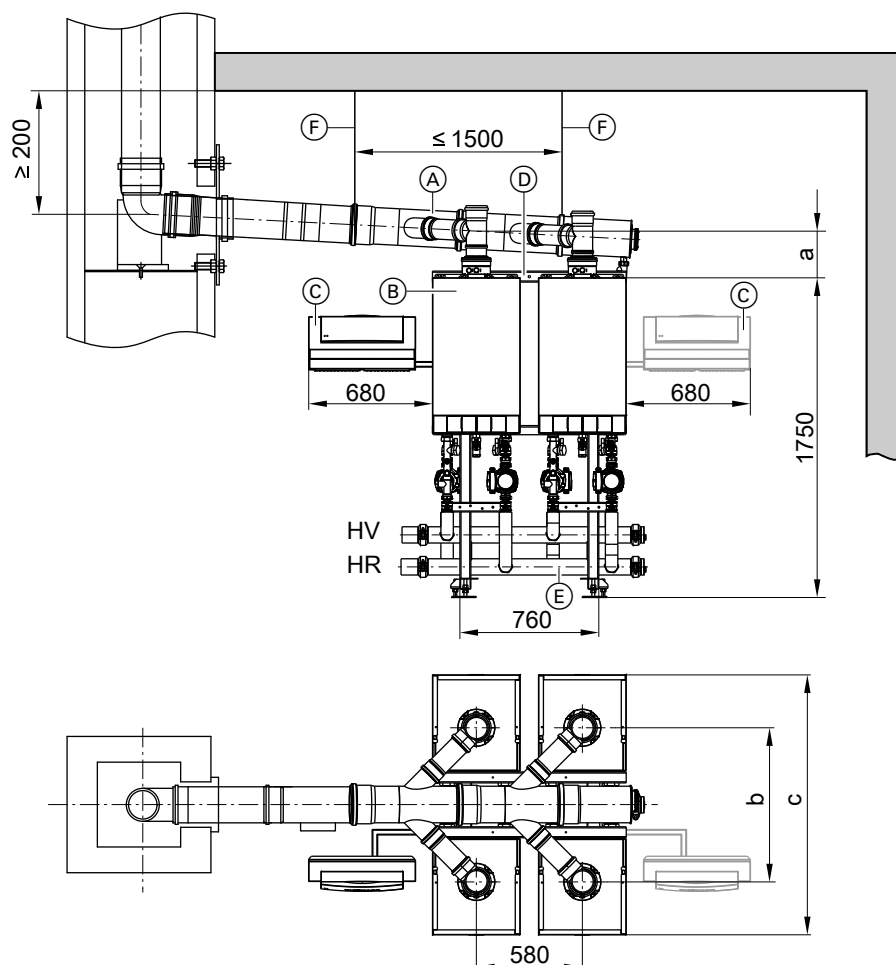
- Hydraulic cascade with thermal insulation
- Connection accessory with circulation pumps (3-stage or high efficiency) and thermal insulation

Accessories (subject to order)

- Low loss header in connection lines and thermal insulation or
- Heating circuit connecting kit with thermal insulation

Design information (cont.)

Installation in block formation with a flue gas cascade



Shown without the thermal insulation supplied

- (A) Flue gas cascade
- (B) Vitodens
- (C) Vitotronic 300-K (can be fitted either to the left or the right)
The total length of all BUS cables (on site) should not exceed 50 m.

- (D) Self-supporting mounting frame
- (E) Hydraulic cascade
- (F) Flue gas cascade mounted on the ceiling
- HR Heating return
- HV Heating flow

Note

Secure the flue gas cascade with suitable means.

Suspension from the ceiling is recommended. Observe the max. distance between fixing points (F).

For details regarding the flue gas cascade, see page 24 and the technical guide on flue systems.

For further details regarding the hydraulic cascade, see page 28.

Boiler		(2x2) 45 kW (2x2) 60 kW	(2x2) 80 kW (2x2) 105 kW	(2x3) 80 kW (2x3) 105 kW	(2x4) 105 kW
a	mm	176	176	207	237
b	mm	680	843	843	843
c	mm	1350	1422	1422	1422

Multi boiler system standard delivery

- Vitodens 200-W (4 to 8 boilers)
- Additional boiler coding card for multi boiler system
- Vitotronic 300-K cascade control unit
- Cascade communication module for each boiler
- Immersion temperature sensor
- Hydraulic cascade with thermal insulation

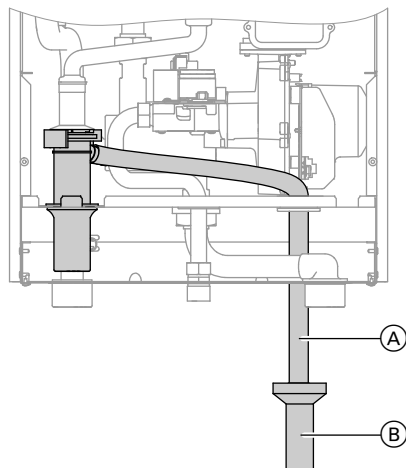
- Self-supporting mounting frame
- Connection accessory with circulation pumps (3-stage or high efficiency) and thermal insulation

Accessories (subject to order)

- Low loss header in connection lines and thermal insulation or
- Heating circuit connecting kit with thermal insulation

4.2 Condensate connection

Route the condensate drain pipe with a constant fall.
Route the condensate from the flue system (if equipped with a drain), together with the boiler condensate directly or (if installed) via a neutralising system (accessory) to the public sewage system.

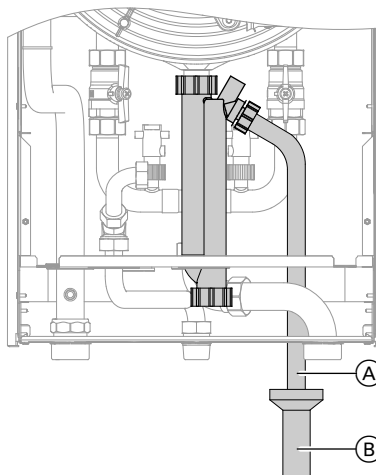


Vitodens 200-W, 45 and 60 kW

- (A) Drain hose (standard delivery for the Vitodens)
- (B) Drain outlet kit (accessories)

Note

A pipe vent valve **must** be installed between the siphon and the neutralising system.



Vitodens 200-W, 80 and 105 kW

- (A) Drain hose (standard delivery for the Vitodens)
- (B) Drain outlet kit (accessories)

Condensate drain and neutralisation

Drain the condensate created during the heating operation in the condensing boiler and in the flue pipe in accordance with appropriate regulations. During gas combustion, the condensate will have a pH between 4 and 5.

Code of Practice ATV-DVWK-A 251 "Condensate from condensing boilers", which is generally based on the local waste water regulations [in Germany], defines the conditions for draining condensate from condensing boilers into the public sewage system.

The composition of condensate drained from Vitodens condensing boilers meets the requirements specified in Code of Practice ATV-DVWK-A 251.

The condensate drain pipe to the sewer connection must be able to be inspected.

It must be installed with a continuous fall and must contain a stench trap. Also provide a suitable facility for sampling.

Condensate drain pipes must only be made from corrosion-resistant materials (e.g. reinforced hose).

Never use any galvanised materials or those containing copper for pipes, connection pieces etc.

A siphon is installed in the condensate drain to prevent flue gases escaping.

Local waste water regulations and/or specific technical circumstances may specify designs that vary from those described in the above Codes of Practice.

It is advisable to contact your local authority responsible for waste water management prior to installation, to find out about local regulations.

Condensate from gas combustion equipment up to 200 kW combustion output

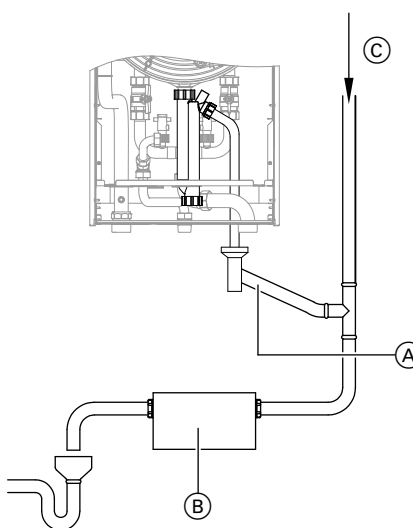
Up to a rated heating output of 200 kW, the condensate from a gas condensing boiler can generally be introduced into the public sewage system without prior neutralisation.

Also ensure that your domestic drainage systems are made from materials that are resistant to acidic condensate.

According to Code of Practice ATV-DVWK-A 251, these materials include:

- Clay pipes
- Hard PVC pipes
- PVC pipes
- PE HD pipes
- PP pipes
- ABS/ASA pipes
- Stainless steel pipes
- Borosilicate pipes

Neutralising system



- (A) Condensate drain
- (B) Neutralising system
- (C) Ventilation via the roof

Design information (cont.)

The Vitodens can (if required) be supplied with a separate neutralising system (accessory). Any condensate is piped to and treated in the neutralising system.

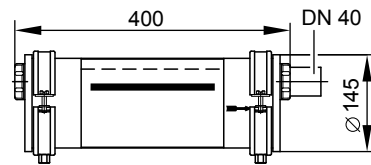
The condensate drain pipe to the sewer connection must be able to be inspected. It must be installed with a fall and stench trap on the sewer side, and must provide a suitable facility for sampling.

Install a condensate lifting pump if the Vitodens has been installed below the waste water anti-flooding level.

Condensate lifting pumps are available as accessories (see the Vitoset pricelist).

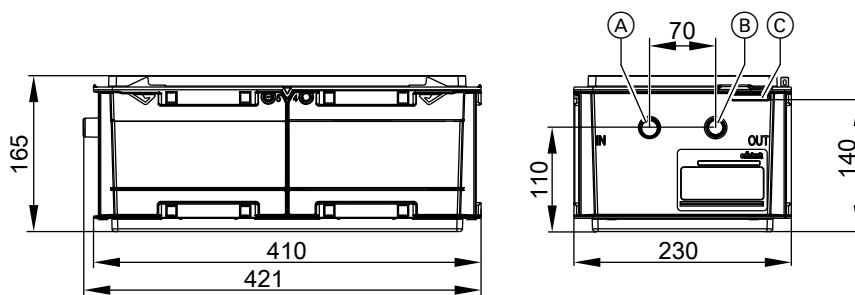
Since the consumption of neutralising granulate depends on the operating mode of the system, determine the required top-up amount during the first year of operation by regular checks. It is feasible that one fill may last longer than 12 months.

Neutralising system for single boiler systems with 45 and 60 kW Part no. 9535 742



Neutralising system for single boiler systems with 80 and 105 kW, and multi boiler systems

Part no. 7441 823



- (A) Inlet (DN 20)
- (B) Outlet (DN 20)
- (C) Overflow aperture

Condensate lifting system

Part no. 7374 796

Automatic condensate lifting system for condensate with a pH value ≥ 2.7 from oil and gas condensing boilers.

Components:

- Condensate container 0.5 l
- Shaftless permanent magnet ball motor pump
- Control unit for pump operation, display of operating conditions and fault messages

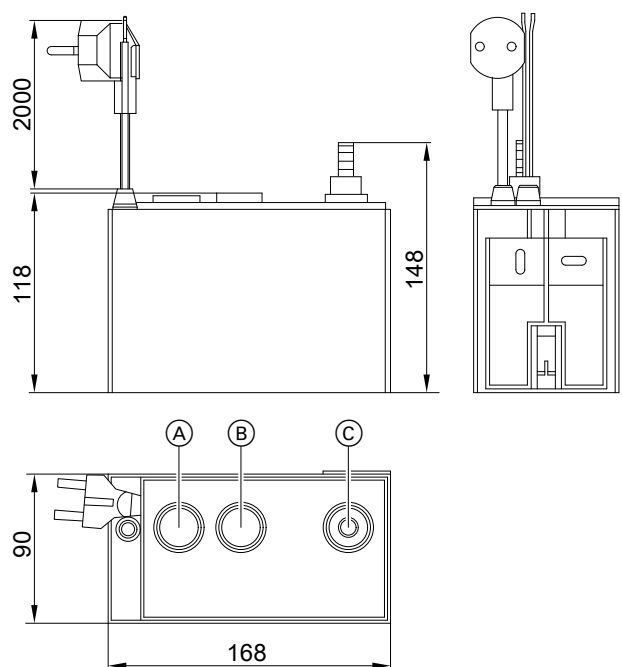
- 2 m long power cable with plug

- Two $\varnothing 24$ mm connection apertures for condensate inlet

The standard delivery comprises:

- 6 m long drain hose $\varnothing 14 \times 2$ mm

- Non-return valve



- (A) Condensate inlet
- (B) Condensate inlet with drain plug
- (C) Condensate drain

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Power consumption	20 W

Design information (cont.)

IP rating
Protection class

IP 44
F

Permissible medium temperature +60 °C
Max. head 45 kPa
Max. capacity 450 l/h
Zero volt contact N/C, breaking capacity 230 VA

4.3 Hydraulic connection

General information

System design

Viessmann condensing boilers can generally be installed in any fully pumped hot water heating system (sealed unvented system). Connection sets with an integral circulation pump are available as accessories.

Minimum system pressure 1.0 bar.

The boiler water temperature is limited to 82 °C.

To keep distribution losses as low as possible, we recommend sizing the heat distribution system for a maximum flow temperature of 70 °C.

Chemical anti-corrosion agents

Corrosion is generally avoided in correctly installed and operated sealed unvented heating systems.

Never use chemical anti-corrosion agents.

Some manufacturers of plastic pipes recommend the use of chemical additives. In such cases, only use anti-corrosion agents offered by the heating trade that have been approved for boilers with DHW heating via single-walled heat exchangers (instantaneous water heater or DHW cylinder).

For this, observe the VDI Directive 2035 [or local regulations].

Heating circuits

For heating systems with plastic pipes, we recommend the use of impermeable pipes to prevent the diffusion of oxygen through the pipe walls.

Provide system separation in heating systems with plastic pipes to DIN 4726 that are permeable to oxygen. We supply a separate heat exchanger for this.

Install a sludge separator in underfloor heating systems and systems with a large water content; see the Viessmann Vitoset pricelist.

Even with condensing boilers, connect underfloor heating systems and heating circuits with a very large water content (>15 l/kW) to the boiler via a 3-way mixer; see technical guide "Control of underfloor heating systems" or the relevant sample applications.

Install a temperature limiter in the flow of the underfloor heating circuit to limit the maximum temperature. Observe the requirements of DIN 18560-2 [or local regulations].

Plastic pipework for radiators

We also recommend the installation of a temperature limiter to restrict the maximum temperature of plastic pipes in heating circuits with radiators.

Safety valve

A safety valve in accordance with TRD 721 is part of the heating circuit connection set (accessory) (opening pressure 4 bar).

Route the discharge pipe in accordance with EN 12828 into a drain outlet (drain outlet kit available as an accessory). The drain outlet incorporates a siphon as a stretch trap.

Low water indicator

According to EN 12828, a low water indicator can be omitted for boilers up to 300 kW, as long as heating can be reliably prevented in the case of water shortage.

Viessmann Vitodens boilers are equipped with a low water indicator (boil-dry protection). Tests have verified that the burner will be automatically switched off in the event of water shortage due to a leak in the heating system and simultaneous burner operation, before the boiler or the flue system reach unacceptably high temperatures.

Attic heating centre

The installation of a low water indicator specified as compulsory to EN 12828 is not required when installing the Vitodens in an attic heating centre.

The Vitodens condensing boilers are protected against water shortage in accordance with EN 12828.

Water quality/Frost protection

Unsuitable fill and top-up water increases the level of deposits and corrosion and may lead to boiler damage.

Regarding the quality and volume of heating water, incl. fill and top-up water, observe VDI 2035.

- Thoroughly flush the entire heating system prior to filling it with water.
- Only use fill water of potable water quality.
- Fill and top-up water with a water hardness in excess of the following values must be softened, e.g. with the small softening system for heating water (see the Viessmann Vitoset pricelist):

Total permissible hardness of the fill and top-up water

Total heating output kW	Specific system volume		
	< 20 l/kW	≥ 20 l/kW to < 50 l/kW	≥ 50 l/kW
≤ 50	≤ 3.0 mol/m ³ (16.8 °dH)	≤ 2.0 mol/m ³ (11.2 °dH)	< 0.02 mol/m ³ (0.11 °dH)
> 50 to ≤ 200	≤ 2.0 mol/m ³ (11.2 °dH)	≤ 1.5 mol/m ³ (8.4 °dH)	< 0.02 mol/m ³ (0.11 °dH)
> 200 to ≤ 600	≤ 1.5 mol/m ³ (8.4 °dH)	≤ 0.02 mol/m ³ (0.11 °dH)	< 0.02 mol/m ³ (0.11 °dH)
> 600	< 0.02 mol/m ³ (0.11 °dH)	< 0.02 mol/m ³ (0.11 °dH)	< 0.02 mol/m ³ (0.11 °dH)

- For systems with a specific system volume in excess of 20 litres/kW heating output, use the output of the smallest boiler in multi boiler systems.
- An antifreeze additive suitable for heating systems can be added to the fill water. The antifreeze manufacturer must verify its suitability, since otherwise damage to gaskets and diaphragms can occur as well as noise during heating operation. Viessmann accepts no liability for damage or consequential damage resulting from these causes.

When engineering the system, observe the following:

- Install shut-off valves in different sections. This prevents the need for draining all the heating water in the case of repairs or system expansion.
- In systems > 50 kW, install a water meter to record the volume of the fill and top-up water. Record the amount of water filled into the system and the water hardness.

Operating information:

- Commission the system step by step, starting with the lowest boiler output and a high heating water flow rate. This prevents a localised concentration of limescale deposits on the boiler heating surfaces.
- In multi boiler systems, start all boilers simultaneously to prevent the entire limescale deposit settling in the heat transfer area of just one boiler.
- During expansion or repair work, only drain the necessary pipework sections.

Design information (cont.)

- Where water treatment is required, treat even the first fill of the heating system prior to commissioning. This also applies to any subsequent filling, e.g. when adding top-up water, after a repair or after system expansion.
- Filters, dirt traps and other discharge or separating facilities in the heating water circuit must be checked, cleaned and activated more frequently after commissioning or recommissioning, and later on as required, subject to the water treatment applied (e.g. water softening).

Expansion vessels

In accordance with EN 12828, water heating systems must be equipped with an expansion vessel.

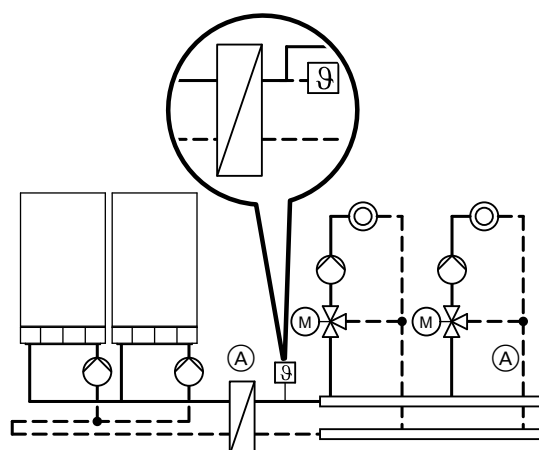
Installation examples

For installation examples for the Vitodens 200-W, see "System examples".

Multi boiler systems

We recommend the installation of a low loss header in multi boiler systems. For this, order the low loss header that is available as an accessory. See page 28 and the Viessmann pricelist. Losses resulting from the use of third party low loss headers are excluded from our liability. On-site safety equipment should comply with EN 12828.

As an alternative to the low loss header, a suitably sized plate heat exchanger may be used to provide system separation. In that case, the flow temperature sensor should be arranged on the secondary side of the plate heat exchanger. See the following system example.



(A) Flow temperature sensor

Low loss header

Application

Design rules for system hydraulics:

- When balancing the low loss header, adjust the flow rate on the equipment side to approx. 10 to 30 % lower than the flow rate on the system side (reducing the return temperature).
- The low loss header should be sized for the max. flow rate that may occur in the system as a whole.

The low loss header separates the heat source (boiler circuit) from the downstream heating circuits.

Install a low loss header if the maximum flow rate in an individual case is greater than the values shown in the table below.

Information on sizing the plate heat exchanger:

- The pressure drop in the plate heat exchanger must be lower than the lowest pressure drop of connected heating circuits.
- Fit a dirt trap on the secondary side of the plate heat exchanger.
- When sizing, take the temperature differential of the plate heat exchanger into account (max. flow temperature in a multi boiler system with Vitodens 200-W: 80 °C)

Boiler	Max. flow rate l/h
Vitodens 200-W, 17 - 45 kW	3500
Vitodens 200-W, 17 - 60 kW	3500
Vitodens 200-W, 30 - 80 kW	5700
Vitodens 200-W, 30 - 105 kW	5700

We recommend installing a low loss header if the minimum flow rates listed in the table below cannot be guaranteed.

Boiler	Min. flow rate l/h
Vitodens 200-W, 17 - 45 kW	450
Vitodens 200-W, 17 - 60 kW	450
Vitodens 200-W, 30 - 80 kW	1300
Vitodens 200-W, 30 - 105 kW	1300

Design information (cont.)

For installation schemes in conjunction with low loss headers, see the relevant sample application in the "System examples" document.

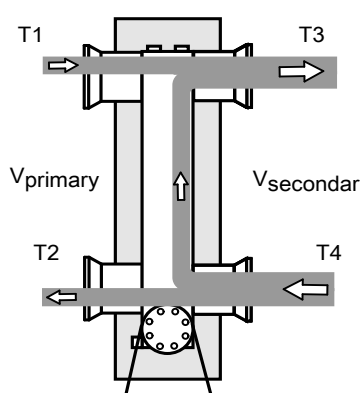
Boiler circuit

The circulation pump in the Vitodens must be able to supply the required water volume against the (mostly low) pressure drop of the boiler circuit; the pressure drop of the low loss header is negligible. Subject to the water volume circulating in the boiler circuit, the respective residual head may be determined for sizing the internal pipe diameters using the pump diagram; alternatively the variable speed pump can be adjusted accordingly.

Heating circuit

The heating circuit pumps to be installed on site must be able to deliver the water volume in the heating circuits against their pressure drop, and must be sized accordingly.

Principle of operation



V_{primary}	Heating water volume, boiler circuit (approx. 10 - 30 % less than $V_{\text{secondary}}$)
$V_{\text{secondary}}$	Heating water volume, heating circuit
T_1	Flow temperature, boiler circuit
T_2	Return temperature, boiler circuit
T_3	Flow temperature, heating circuit
T_4	Return temperature, heating circuit
Q_{primary}	Amount of heat supplied by the boiler
$Q_{\text{secondary}}$	Amount of heat transferred by the heating circuit

V_{primary}	$< V_{\text{secondary}}$
T_1	$> T_3$
T_2	$\approx T_4$
Q_{primary}	$= Q_{\text{secondary}}$

Note

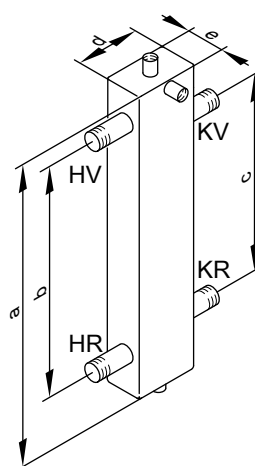
Suitable thermometers in the flow and return of the low loss header make adjustments easier.

Low loss header in conjunction with Divicon heating circuit distributor

For description and specification, see page 14.

Low loss header for the Vitodens 200-W with 45 and 60 kW from the Vitoset range

See the "Vitoset" pricelist.



HR Heating return
HV Heating flow
KR Boiler return
KV Boiler flow

Flow rate max.	m ³ /h	4	4	8	10	18
Connections						
- Female thread	Rp	1				
- Male thread	R		1¼	2		
- Flange	DN				65	80
Dimension						
a	mm	500	500	800	1400	1450
b	mm	360	360	650	1000	1000
c	mm	270	270	550	1000	1000
d	mm	80	80	120	160	200
e	mm	50	50	80	80	120

Low loss header for the Vitodens 200-W with 80 and 105 kW

See page 23.

Low loss header with distributor/manifold for multi boiler systems with Vitodens 200-W

For description and specification, see page 28.

Control units

5.1 Vitotronic 100, type HC1B, for constant temperature operation

Structure and functions

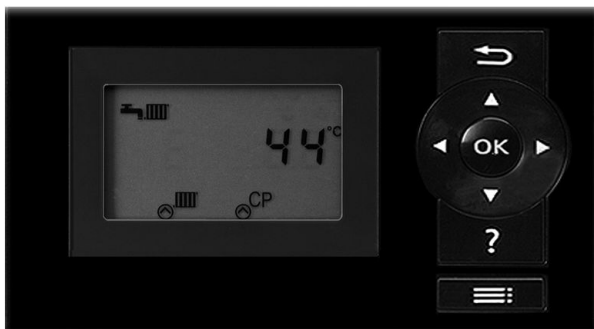
Modular design

The control unit is integrated into the boiler.

The control unit comprises a standard unit, electronics modules and a programming unit.

Standard unit:

- ON/OFF switch
- Optolink laptop interface
- Operating and fault display
- Reset button
- Fuses



Programming unit:

- Easy operation through display with large font and depiction with good contrast
- Removable programming unit; can be mounted as option on the wall with separate accessory
- User prompts through pictographs
- Control keys for:
 - Navigation
 - Confirmation
 - Adjustments/menu
- Setting the:
 - Boiler water temperature
 - DHW temperature
 - Heating program
 - Codes
 - Actuator tests
 - Test mode
- Displaying:
 - Boiler water temperature
 - Set DHW temperature
 - Operating details
 - Diagnostic details
 - Fault messages

Functions

- Electronic boiler control unit for operation at a constant boiler water temperature
- Room temperature-dependent operation requires a Vitotrol 100, type UTA, UTDB or UTDB-RF (according to EnEV [Germany])
- Heating system frost protection
- Anti-seizing pump protection
- Integral diagnostic system
- Cylinder thermostat with priority
- Control of solar DHW heating and central heating backup in conjunction with the solar control module, type SM1
- Auxiliary function for DHW heating (short-term heating to a higher temperature)

- Maintenance display
- External starting and blocking (in conjunction with extension EA1)

Control characteristics

PI characteristics with modulating output.

Setting the heating programs

The heating system frost protection (see frost protection function) applies to all heating programs.

The following heating programs can be selected:

- Heating and DHW
- Only DHW
- Standby mode

Frost protection function

The frost protection function is active in all heating programs.

The burner is switched ON at a boiler water temperature of 5 °C and will be switched OFF again at a boiler water temperature of 20 °C.

The circulation pump will be switched ON simultaneously with the burner and switched OFF after a delay.

The DHW cylinder will be heated to approx. 20 °C.

To protect the system against frost, the circulation pump may be started at certain intervals (up to 24 times per day) for periods of approx. 10 minutes.

Summer mode

Heating program "☀"

The burner starts only when the DHW cylinder needs to be heated up again.

Boiler water temperature sensor

The boiler water temperature sensor is connected to the control unit and built into the boiler.

Specification

Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +130 °C
– during storage and transport	-20 to +70 °C

Cylinder temperature sensor

The standard delivery includes the DHW cylinder connection set.

Specification

Lead length	3.75 m, fully wired
IP rating	IP 32
Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +90 °C
– during storage and transport	-20 to +70 °C

Specification Vitotronic 100, type HC1B

Rated voltage	230 V~	– during storage and transport	-20 to +65 °C
Rated frequency	50 Hz	Electronic temperature controller setting (heating mode)	82 °C (cannot be changed)
Rated current	6 A	Setting range for the DHW temperature	10 to 68 °C
Safety category	I		
Function	Type 1 B to EN 60730-1		
Permissible ambient temperature			
– during operation	0 to +40 °C		
	Installation in living spaces or boiler rooms (standard ambient conditions)		

5.2 Vitotronic 200, type HO1B, for weather-compensated operation

Structure and functions

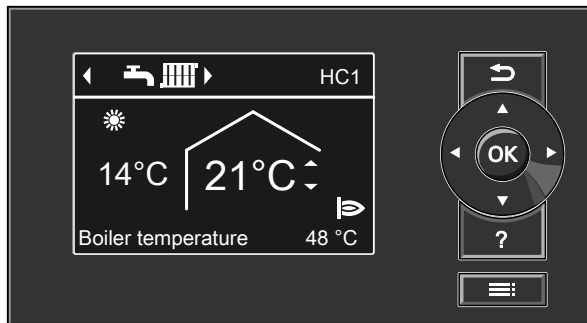
Modular structure

The control unit is integrated into the boiler.

The control unit comprises a standard unit, electronics modules and a programming unit.

Standard unit:

- ON/OFF switch
- Optolink laptop interface
- Operating and fault display
- Reset button
- Fuses



Programming unit:

- Easy operation through:
 - Plain text display with graphic ability
 - Large font and black/white depiction for good contrast
 - Context-sensitive help
 - Removable programming unit; can be mounted as option on the wall with separate accessory
- With digital time switch
- Control keys for:
 - Navigation
 - Confirmation
 - Help and additional information
 - Menu
- Setting the:
 - Room temperature
 - Reduced room temperature
 - DHW temperature
 - Heating program
 - Time programs for central heating, DHW heating and DHW circulation
 - Economy mode
 - Party mode
 - Holiday program
 - Heating curves
 - Codes
 - Actuator tests
 - Test mode
- Displaying:
 - Boiler water temperature
 - Set DHW temperature
 - Operating details
 - Diagnostic details
 - Fault messages

Functions

- Weather-compensated control of the boiler water and/or flow temperature
- Control of one heating circuit without mixer and two heating circuits with mixer
- Electronic maximum and minimum temperature limit

- Demand-dependent heating circuit pump and burner off control
- Adjustment of a variable heating limit
- Anti-seizing pump protection
- Heating system frost protection
- Integral diagnostic system
- Maintenance display
- Cylinder thermostat with priority
- Control of solar DHW heating and central heating backup in conjunction with the solar control module, type SM1
- Display of the solar energy yield
- Auxiliary function for DHW heating (short-term heating to a higher temperature)
- Screed drying program
- External starting and blocking (in conjunction with extension EA1)

The requirements of DIN EN 12831 for calculating the heating load are met. To reduce the heat-up load, the reduced room temperature will be raised in case of low outside temperatures. The flow temperature will be raised for a limited time to reduce the heat-up time after a set-back phase.

According to the Energy Saving Ordinance [Germany], the temperature in each room must be individually controlled, e.g. through thermostatic radiator valves.

Control characteristics

PI characteristics with modulating output.

Time switch

Digital time switch (integrated into the programming unit)

- Individual day and seven-day program
- Automatic summer/wintertime changeover
- Automatic function for DHW heating and DHW circulation pump
- Time, day and standard switching times for central heating, DHW heating and the DHW circulation pump are factory-set
- Switching times are individually programmable, i.e. up to four switching periods per day

Shortest switching interval: 10 minutes

Power reserve: 14 days

Setting the operating programs

The heating system frost protection (see frost protection function) applies to all heating programs.

The following heating programs can be selected:

- Heating and DHW
- Only DHW
- Standby mode

External heating program changeover in conjunction with EA1 extension.

Frost protection function

- The frost protection function will be started when the outside temperature drops below approx. +1 °C.

With frost protection, the heating circuit pump is switched ON and the boiler water is maintained at a lower temperature of approx. 20 °C.

The DHW cylinder will be heated to approx. 20°C.

- The frost protection function will be stopped when the outside temperature rises above approx. +3 °C.

Summer mode

Heating program "☀"

The burner starts only when the DHW cylinder needs to be heated up again.

Control units (cont.)

Adjusting the heating curves (slope and level)

The Vitotronic 200 controls the boiler water temperature (= flow temperature of the heating circuit without mixer) **and** the flow temperature of the heating circuits with mixer (in conjunction with the extension kit for one heating circuit with mixer) in weather-compensated mode. The boiler water temperature is automatically boosted by between 0 and 40 K higher than the currently required set flow temperature (delivered condition 8 K).

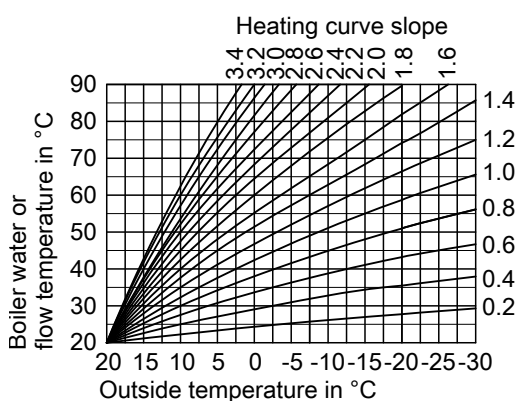
The flow temperature required to reach a specific room temperature depends on the heating system and the thermal insulation of the building to be heated.

Adjusting the heating curves matches the boiler water temperature and the flow temperature to these operating conditions.

Heating curves:

The upper boiler water temperature is limited by the temperature limiter and the temperature set at the electronic maximum thermostat.

The flow temperature cannot exceed the boiler water temperature.



Heating systems with low loss header

When using a hydraulic separation (low loss header), connect a temperature sensor for use in the low loss header.

Boiler water temperature sensor

The boiler water temperature sensor is connected to the control unit and built into the boiler.

Specification

Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +130 °C
– during storage and transport	-20 to +70 °C

Cylinder temperature sensor

The standard delivery includes the DHW cylinder connection set.

Specification

Lead length	3.75 m, fully wired
IP rating	IP 32
Sensor type	Viessmann NTC, 10 kΩ at 25 °C

Permissible ambient temperature

– during operation	0 to +90 °C
– during storage and transport	-20 to +70 °C

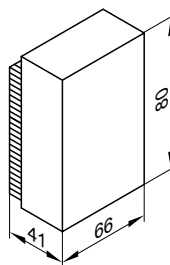
Outside temperature sensor

Installation site:

- North or north-western wall of the building
- 2 to 2.5 m above the ground, for multi storey buildings in the upper half of the second floor

Connection:

- 2-core lead, length max. 35 m with a cross-section of 1.5 mm² (copper).
- Never route this lead immediately next to 230/400 V cables



Specification

IP rating	IP 43 to EN 60529 ensure through appropriate design/installation
Sensor type	Viessmann NTC 10kΩ at 25 °C
Permissible ambient temperature during operation, storage and transport	-40 to +70 °C

Specification Vitotronic 200, type HO1B

Rated voltage	230 V~	Electronic temperature controller setting (heating mode)	82 °C (cannot be changed)
Rated frequency	50 Hz	Setting range for the DHW temperature	10 to 68 °C
Rated current	6 A	Heating curve setting range	
Safety category	I	Slope	0.2 to 3.5
Permissible ambient temperature		Level	-13 to 40 K
– during operation	0 to +40 °C		
Installation in living spaces or boiler rooms (standard ambient conditions)			
– during storage and transport	-20 to +65 °C		

5.3 Vitotronic 300-K, type MW2B for multi boiler systems

Cascade control unit for the Vitodens 200-W with Vitotronic 100

Weather-compensated, digital cascade and heating circuit control unit

- For multi boiler systems with Vitodens 200-W
- With boiler sequence strategy
- For up to two heating circuits with mixers (extension for heating circuits 2 and 3 required as accessory).
Up to a further 32 Vitotronic 200-H heating circuit control units can be connected via the LON BUS (LON module required; accessory)
- For modulating operation in conjunction with the Vitotronic 100, type HC1B

- With cylinder temperature controller or control unit of a primary store system with mixer assembly
- Capable of communicating via LON BUS (LON communication module and terminators available as accessories)
- With integral diagnostic system

Note

To improve the resilience against interference/faults, the components of a control unit should be connected to the same phase.

Structure and function

Modular structure

The control unit comprises a standard unit, electronics modules and a programming unit.

Standard unit:

- ON/OFF switch
- Emissions test switch
- Optolink laptop interface
- Operation and fault displays
- Plug connection chamber
 - Connection of external equipment via a system plug
 - Plug the connectors directly into the front of the open control unit
 - Connection of three-phase consumers via additional contactors

Programming unit:

- Easy operation through:
 - Plain text display with graphic ability
 - Large font and black/white depiction for good contrast
 - Context-sensitive help
- With digital time switch
- Control keys for:
 - Navigation
 - Confirmation
 - Help and additional information
 - Extended menu
- Setting the:
 - Room temperature
 - Reduced room temperature
 - DHW temperature
 - Heating program
 - Time programs for central heating, DHW heating and DHW circulation
 - Economy mode
 - Party mode
 - Holiday program
 - Heating curves
 - Codes
 - Actuator tests
 - Test mode
- Displaying:
 - Flow temperature
 - DHW temperature
 - Information
 - Operating details
 - Diagnostic details
 - Fault messages

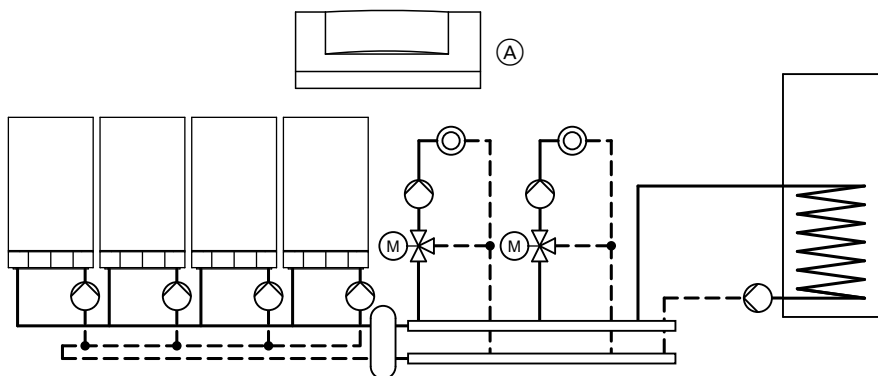
Functions

- Weather-compensated regulation of the system/boiler water temperature in a multi boiler system with Vitodens 200-W with Vitotronic 100, type HC1B (modulating) and the flow temperature of the heating circuits with mixers
- Control of boilers (with a Vitotronic 100, type HC1B) in accordance with a freely selectable boiler sequence strategy
- Electronic maximum temperature limiter
- Demand-dependent heating circuit pump shutdown
- Adjustment of a variable heating limit
- Pump anti-seizing protection
- Central fault message
- Integral diagnostic system
- Adaptive cylinder temperature controller with priority (heating circuit pump OFF, mixer closed)
- Auxiliary function for DHW heating (short term heating to a higher temperature)
- Control of a primary store system with a regulated 3-way mixing valve
- Screed drying, for underfloor heating systems

The requirements of DIN EN 12831 for calculating the heating load are met. To reduce the heat-up load, the reduced room temperature will be raised in case of low outside temperatures. The flow temperature will be raised for a limited time to reduce the heat-up time after a set-back phase.

According to the Energy Saving Ordinance [Germany], the temperature in each room must be individually controlled, e.g. through thermostatic radiator valves.

DHW heating in a multi boiler system



(A) Vitotronic 300-K

Control characteristics

- PI characteristics with three-point output
- Setting range for heating curves:
 - Slope: 0.2 to 3.5
 - Level: –13 to 40 K
 - Max. limit: 1 to 127 °C
 - Min. limit: 1 to 127 °C
 - Differential temperature for a heating circuit with mixer: 0 to 40 K
- Set DHW temperature range:
 - 10 to 60 °C, adjustable between 10 and 95 °C (available temperature limited by the max. boiler flow temperature).

Time switch

Digital time switch (integrated into the programming unit)

- Single and 7-day program, annual calendar
 - Automatic summer/wintertime changeover
 - Automatic function for DHW heating and DHW circulation pump
 - Time, day and standard switching times for central heating, DHW heating and the DHW circulation pump are factory-set
 - Switching times are individually programmable, i.e. up to four switching periods per day
- Shortest switching interval: 10 min
Power reserve: 14 days

Setting heating programs

The heating system frost protection (see frost protection function) applies to all heating programs.

You can select the following heating programs with the program keys:

- Heating and DHW
- Only DHW
- Standby mode

Optional external changeover of heating program for all heating circuits together or for selected heating circuits only.

Frost protection function

- The frost protection function will be started when the outside temperature drops below approx. +1 °C.
With frost protection, the heating circuit pump is switched ON and the boiler water is maintained at a lower temperature of approx. 20 °C.
The DHW cylinder will be heated to approx. 20 °C.
- The frost protection function will be stopped when the outside temperature rises above approx. +3 °C.

Summer mode

("DHW only")

One or more burners start when the DHW cylinder needs to be heated up (controlled by the cylinder temperature controller).

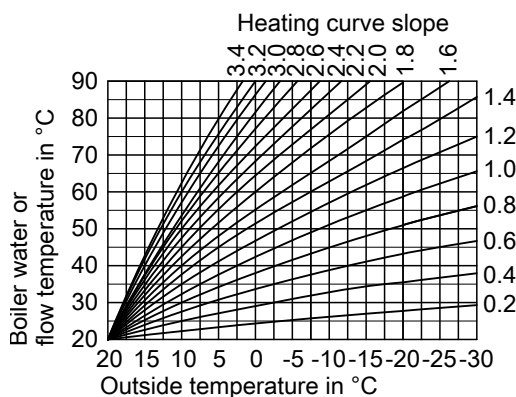
Heating curve setting (slope and level)

Subject to heating system:

- The Vitotronic controls the flow temperature of up to 2 heating circuits with mixers in weather-compensated mode
- The Vitotronic automatically regulates the system/flow temperature to 0 to 40 K (delivered condition 8 K) higher than the currently highest set flow temperature

The flow temperature required to reach a specific room temperature depends on the heating system and the thermal insulation of the building to be heated.

Adjusting the heating curves matches the system flow temperature and the heating circuit flow temperature to these conditions.



The upper flow temperature is limited by temperature controller "Ü" and the electronically set maximum temperature of the Vitotronic 100 boiler control units, type HC1B.

Outside temperature sensor

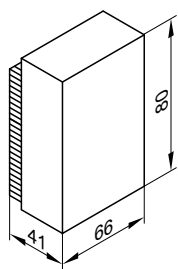
Installation site:

- North or north-western wall of the building
- 2 to 2.5 m above the ground, for multi storey buildings in the upper half of the second floor

Connection:

- 2-core lead, length max. 35 m with a cross-section of 1.5 mm² (copper).
- Never route this lead immediately next to 230/400 V cables

Control units (cont.)



Specification

IP rating	IP 43 to EN 60529 ensure through appropriate design/installation
Sensor type	Viessmann NTC 10kΩ at 25 °C
Permissible ambient temperature during operation, storage and transport	–40 to +70 °C

Immersion temperature sensor

To capture the common flow temperature of the multi boiler system.

Inserted into the sensor well of the low loss header or secured with a tie.

Specification

Lead length	5.8 m, fully wired
IP rating	IP 32 to EN 60529
Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +90 °C
– during storage and transport	–20 to +70 °C

Cylinder temperature sensor

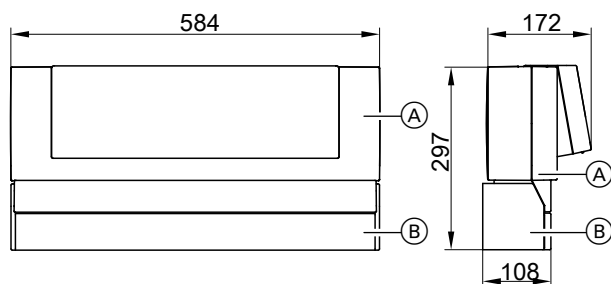
Specification

Lead length	5.8 m, fully wired
IP rating	IP 32 to EN 60529
Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +90 °C
– during storage and transport	–20 to +70 °C

Specification, Vitotronic 300-K

Rated voltage:	230 V ~	– during storage and transport:	–20 to +65 °C
Rated frequency:	50 Hz	Rated relay output breaking capacity:	
Rated current:	6 A	– Heating circuit pumps or heat exchanger set [20]:	4(2) A 230 V~
Power consumption:	10 W	– Circulation pump for cylinder heating [21]:	4(2) A 230 V~
Safety category:	I	– DHW circulation pump [28]:	4(2) A 230 V~
IP rating:	IP 20 D to EN 60529, ensure through design/ installation	– Distribution pump [29]:	4(2) A 230 V~
Function:	Type 1B to EN 60730-1	– Central fault message [50]:	4(2) A 230 V~
Permissible ambient temperature		– Motor, 3-way mixing valve, primary store system or Mixer motor [52]:	0.2(0.1) A 230 V~ 6 A 230 V~
– during operation:	0 to +40 °C for use in the living space or boiler room (standard ambient condi- tions)	– Overall max.	

Dimensions



- (A) Vitotronic 300-K
- (B) Mounting panel

Delivered condition Vitotronic 300-K

- Programming unit with backlit plain text prompts
- Cascade communication module (corresponding to the number of Vitodens)
- Outside temperature sensor
- Flow temperature sensor
- Cylinder temperature sensor
- Mounting panel

The control unit is fitted to the wall with a mounting panel.

To control the heating circuits with mixers, the extension for heating circuits 2 and 3 is required (accessory).

An extension kit (accessories) is required for each heating circuit with mixer.

The LON communication module and BUS terminators are available as accessories to enable communication.

Control units (cont.)

Heating system with DHW cylinder

Order the circulation pump with check valve or the Vitotrans 222 primary store system separately.

5.4 Vitotronic accessories

Assignment to control unit types

Vitotronic	100	200	300-K
Type	HC1B	HO1B	MW2B
Accessories			
Vitotrol 100, type UTA	x		
Vitotrol 100, type UTDB	x		
External extension H4	x		
Vitotrol 100, type UTDB-RF	x		
Vitotrol 200A		x	x
Vitotrol 300A		x	x
Room temperature sensor for Vitotrol 300A		x	x
Mounting base for programming unit	x	x	
Radio clock receiver		x	x
Immersion temperature sensor		x	
Vitocom 100	x	x	
Extension for heating circuits with mixers 2 and 3			x
Extension kit for one heating circuit with mixer			x
Extension kit for one heating circuit with mixer with integral mixer motor		x	
Extension kit for one heating circuit with mixer with separate mixer motor		x	
Mixer motor		x	x
Solar control module, type SM1	x	x	x
Immersion temperature sensor	x	x	x
Immersion thermostat		x	x
Contact thermostat		x	x
LON communication module		x	x
LON connecting cable		x	x
LON coupling		x	x
LON plug-in connector		x	x
LON socket		x	x
Terminator		x	x
KM BUS distributor	x	x	x
Internal extension H1	x	x	
Internal extension H2	x	x	
Extension AM1	x	x	
Extension EA1	x	x	x

Vitotrol 100, type UTA

Part no. 7170 149

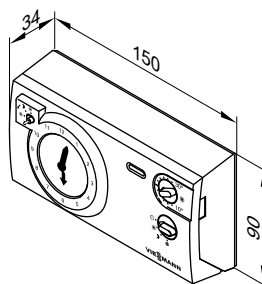
Room thermostat

- With switching output (two-point output)
- With analog time switch
- With adjustable individual day program
- Standard switching times are factory-set (individually programmable)
- Shortest switching interval 15 minutes

Install the Vitotrol 100 in the main living room on an internal wall opposite radiators, but not inside shelf units, recesses, immediately by a door or a heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Control unit connection:

3-core cable with a cross-section of 1.5 mm² (without green/yellow) for 230 V~.



Specification

Rated voltage
Rated breaking capacity of the contact
Protection

230 V/50 Hz

6(1) A 250 V~
IP 20 to EN 60529
safeguard through appropriate design and installation

Control units (cont.)

Permissible ambient temperature

- during operation 0 to +40 °C
- during storage and transport -20 to +60 °C

Set value range for standard and reduced mode

10 to 30 °C

Set room temperature in standby mode

6 °C

Vitotrol 100, type UTDB

Part no. Z007 691

Room temperature controller

- With switching output (two-point output)
- With digital time switch
- With individual and seven-day programs
- Programming unit with user prompts:
 - 3 preselected time programs, individually adjustable
 - Constant manual mode with adjustable set room temperature
 - Frost protection mode
 - Holiday program
- With selector keys for party and economy mode

Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Operation without power supply (two 1.5 V round alkaline batteries, type LR6/AA, which run for approx. 1.5 years).

Control unit connection:

2-core lead with a cross-section of 0.75 mm² for 230 V~.

Specification

Rated voltage

3 V–

Battery LR6/AA

Rated breaking capacity of the zero volt contact

– max.

6(1) A, 230 V~

– min.

1 mA, 5 V–

IP rating

IP 20 to EN 60529; ensure through appropriate design/installation RS Type 1B to EN 60730-1

Function

Permissible ambient temperature

– during operation

0 to +40 °C

– during storage and transport

–25 to +65 °C

Setting range

– Comfort temperature

10 to 40 °C

– Setback temperature

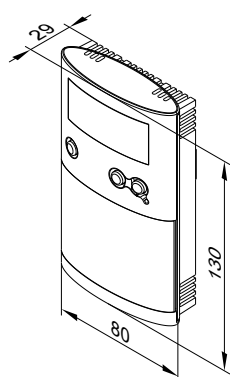
10 to 40 °C

– Frost protection temperature

5 °C

Power reserve during battery change

3 min



External extension H4

Part no. 7197 227

Connection extension for connecting the Vitotrol 100, type UTDB or 24 V clock thermostats via a LV cable.

With cable (0.5 m long) and plug for the connection to the Vitotronic 100.

Specification

Rated voltage

230 V~

Output voltage

24 V~

Rated frequency

50 Hz

Power consumption

2.5 W

Load 24 V~ (max.)

10 W

Protection class

I

IP rating

IP 41

Permissible ambient temperature

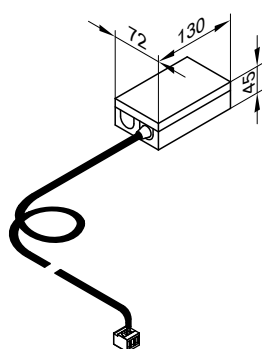
– during operation

0 to +40 °C

Installation in living spaces or boiler rooms (standard ambient conditions)

– during storage and transport

–20 to +65 °C



Vitotrol 100, type UTDB-RF

Part no. Z007 692

Room temperature controller with integral wireless transmitter and one receiver

- With digital time switch
- With individual and seven-day programs
- Programming unit with user prompts:
 - 3 preselected time programs, individually adjustable
 - Constant manual mode with adjustable set room temperature
 - Frost protection mode
 - Holiday program
- With selector keys for party and economy mode

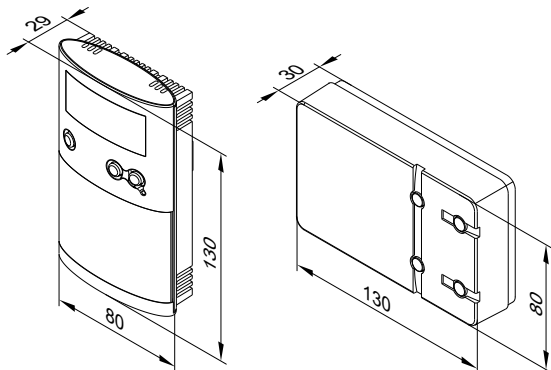
Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.).

Room temperature controller operation without power supply (two 1.5 V round alkaline batteries, type LR6/AA, which run for approx. 1.5 years).

Receiver with relay state indication.

Connection of the receiver to the control unit (subject to control unit type):

- 4-core cable with a cross-section of 1.5 mm² for 230 V~ or
- 3-core cable without green/yellow core for 230 V~ or
- 2-core lead with a cross section of 0.75 mm² for LV for the connection to the control unit, plus an additional 2-core cable for the 230 V~ power supply



Specification, room temperature controller

Rated voltage	3 V–
Transmission frequency	868 MHz
Transmission Range	< 10 mW approx. 25 to 30 m inside buildings, subject to construction
IP rating	IP 20 to EN 60529; ensure through appropriate design/installation
Function	RS Type 1B to EN 60730-1
Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–25 to +65 °C
Setting range	
– Comfort temperature	10 to 40 °C
– Setback temperature	10 to 40 °C
– Frost protection temperature	5 °C
Power reserve during battery change	3 min

Specification, receiver

Operating voltage	230 V~ ± 10 % 50 Hz
Rated breaking capacity of the zero volt contact	
– max.	6(1) A, 230 V~
– min.	1 mA, 5 V–
IP rating	IP 20 to EN 60529; ensure through appropriate design/installation
Protection class	II to EN 60730-1 subject to correct installation
Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–25 to +65 °C

Notes regarding room temperature hook-up (RS function) for remote control units

Never activate the RS function for underfloor heating circuits (inertia).

In heating systems with a heating circuit without mixer and heating circuits with mixer, the RS function must only affect the heating circuit with mixer.

Information regarding the Vitotrol 200A and 300A

One Vitotrol 200A or one Vitotrol 300A can be used for every heating circuit in a heating system.

The Vitotrol 200A can regulate one heating circuit; the Vitotrol 300A up to three heating circuits.

Up to two remote controls may be connected to the control unit.

Vitotrol 200A

Part no. Z008 341
KM BUS subscriber

Functions:

- Display of room temperature, outside temperature and the operating condition.
- Setting the standard room temperature (day temperature) and operating program via the standard display.

Control units (cont.)

Note

The reduced room temperature (night temperature) is set at the control unit.

- Party and economy mode can be enabled via keys.
- Only for heating circuit with mixer:
fitted room temperature sensor for room temperature hook-up

Note

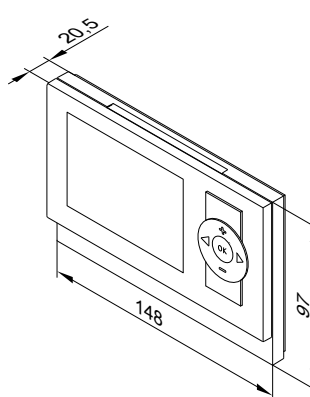
For room temperature hook-up, the Vitotrol 200A must be installed in the living space (lead room).

Installation site:

- Weather-compensated mode:
Installation anywhere in the building.
- Room temperature hook-up:
Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.). The fitted room temperature sensor captures the actual room temperature and effects any necessary correction of the flow temperature.

Connection:

- 2-core lead, length max. 50 m (even if connecting several remote control units)
- Never route this lead immediately next to 230/400 V cables
- LV plug as standard delivery



Specification

Power supply via KM BUS	
Power consumption	0.2 W
Safety category	III
IP rating	IP 30 to EN 60529 ensure through appropriate design/installation
Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–20 to +65 °C
Set room temperature range	3 to 37 °C

Vitotrol 300A

Part no. Z008 342

KM BUS subscriber

Functions:

- Displaying:
 - Room temperature
 - Outside temperature
 - Heating program
 - Operating condition
 - Solar yield as graphic display
- Settings:
 - Set room temperatures for standard mode (day temperature) and reduced mode (night temperature) via the standard display
 - Heating program, switching times for heating circuits, DHW heating and DHW circulation pump plus further settings via plain text menu on the display
- Party and economy mode can be enabled via the menu
- Only for heating circuit with mixer:
fitted room temperature sensor for room temperature hook-up

Note

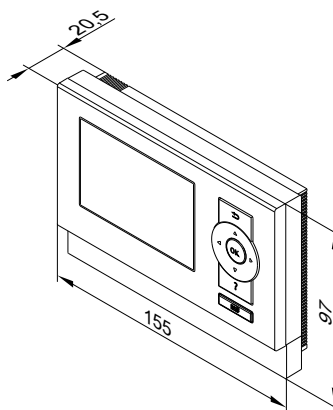
For room temperature hook-up, the Vitotrol 300A must be installed in the living space (lead room).

Installation site:

- Weather-compensated mode:
Installation anywhere in the building.
- Room temperature hook-up:
Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.). The fitted room temperature sensor captures the actual room temperature and effects any necessary correction of the flow temperature.

Connection:

- 2-core lead, length max. 50 m (even if connecting several remote control units)
- Never route this lead immediately next to 230/400 V cables
- LV plug as standard delivery



Specification

Power supply via KM BUS	
Power consumption	0.5 W
Safety category	III
IP rating	IP 30 to EN 60529 ensure through appropriate design/installation
Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–20 to +65 °C
Set room temperature range	3 to 37 °C

Control units (cont.)

Room temperature sensor

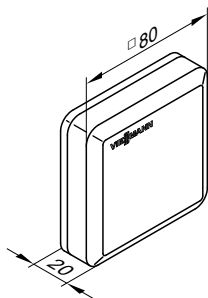
Part no. 7438 537

Separate room temperature sensor as supplement to the Vitotrol 300A; to be used if the Vitotrol 300A cannot be installed inside the main living room or in a suitable position where the unit could capture and adjust the temperature.

Installation in the main living room on an internal wall opposite radiators. Never install inside shelving units, in recesses, or immediately by a door or heat source (e.g. direct sunlight, fireplace, TV set, etc.). Connect the room temperature sensor to the Vitotrol 300A.

Connection:

- 2-core lead with a cross-section of 1.5 mm² (copper)
- Lead length from the remote control up to 30 m
- Never route this lead immediately next to 230/400 V cables



Specification

Safety category
IP rating

Sensor type

Permissible ambient temperature
– during operation
– during storage and transport

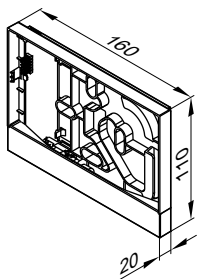
III
IP 30 to EN 60529
ensure through appropriate design/installation
Viessmann NTC, 10 kΩ at 25 °C

0 to +40 °C
–20 to +65 °C

Mounting base for programming unit

Part no. 7299 408

To be able to freely position the programming unit of the control unit anywhere outside the appliance.



To be fitted directly to the wall or a surface box.

Distance from the boiler: Observe the lead length incl. plugs of 5 m.

Comprising:

- Wall mounting base with fixing materials
- 5 m long cable with plugs
- Cover for the control unit aperture on the boiler

Radio clock receiver

Part no. 7450 563

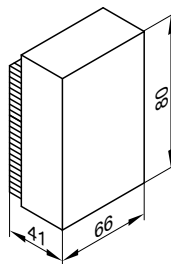
For receiving the DCF 77 time signal (location: Mainflingen near Frankfurt/Main).

Radio controlled setting of time and date.

Install on an outside wall, facing the transmitter. The reception may be reduced by metallic elements in the building structure, e.g. steel reinforced concrete, neighbouring buildings and sources of electro-magnetic interference, e.g. HV and public transport lines.

Connection:

- 2-core lead, length up to 35 m with a cross-section of 1.5 mm² (copper)
- Never route this lead immediately next to 230/400 V cables.



Control units (cont.)

Vitocom 100, type GSM

- Without SIM card
Part no. Z004594
- With contract SIM card for the operation of the Vitocom 100 via mobile phone
Part no. Z004615

Note

For information regarding terms of contract, see "www.viessmann.de/vitocom-100".

Functions:

- Remote switching via GSM mobile phone networks
- Remote scanning via GSM mobile phone networks
- Remote monitoring via SMS to 1 or 2 mobile phones
- Remote monitoring of additional systems via digital input (230 V)

Configuration:

Mobile phones via SMS

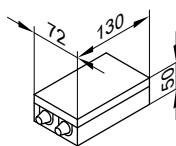
Standard delivery:

- Vitocom 100 (subject to order with or without SIM card)
- Power cable with standard Euro plug (2.0 m long)
- GSM aerial (3.0 m long), magnetic foot and adhesive pad
- KM BUS cable (3.0 m long)

On-site requirements:

Good reception for GSM communication with the selected mobile phone operator.

Total length of all KM BUS subscriber cables up to 50 m.



Specification

Rated voltage	230 V ~
Rated frequency	50 Hz
Rated current	15 mA
Power consumption	4 W
Safety category	II
IP rating	IP 41 to EN 60529; ensure through design/installation Type 1B to EN 60 730-1
Function	
Permissible ambient temperature – during operation	0 to +55 °C Installation in living spaces or boiler rooms (standard ambient conditions)
– during storage and transport	–20 to +85 °C
On-site connection	
Fault input DE 1	230 V ~

Mixer extension kit with integral mixer motor

Part no. 7301 063

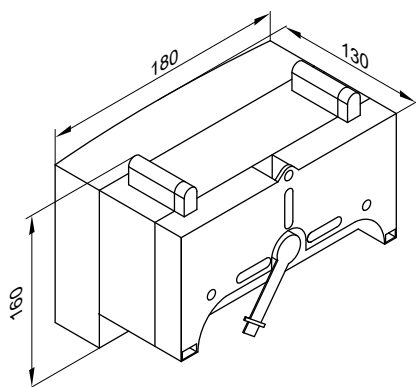
KM BUS subscriber

Components:

- Mixer PCB with mixer motor for Viessmann mixer DN 20 to 50 and R ½ to 1¼
- Flow temperature sensor (contact temperature sensor)
- Plug for connecting the heating circuit pump
- Power cable (3.0 m long) with plug
- BUS cable (3.0 m long) with plug

The mixer motor is mounted directly onto the Viessmann mixer DN 20 to 50 and R ½ to 1¼.

Mixer PCB with mixer motor



Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	5.5 W

IP rating

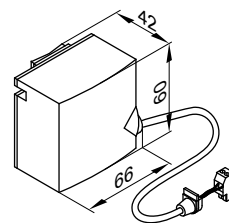
IP 32D to EN 60529
ensure through appropriate design/installation

Safety category

Permissible ambient temperature
– during operation
– during storage and transport
Rated breaking capacity of the relay output for heating circuit pump 20
Torque
Runtime for 90 ° <

0 to +40 °C
–20 to +65 °C
2(1) A 230 V~
3 Nm
120 s

Flow temperature sensor (contact temperature sensor)



Secured with a tie.

Specification

Lead length	2.0 m, fully wired
IP rating	IP 32D to EN 60529 ensure through appropriate design/installation
Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature – during operation	0 to +120 °C
– during storage and transport	–20 to +70 °C

Control units (cont.)

Mixer extension kit for separate mixer motor

Part no. 7301 062

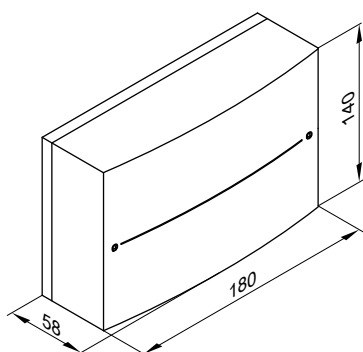
KM BUS subscriber

For the connection of a separate mixer motor.

Components:

- Mixer PCB for the connection of a separate mixer motor
- Flow temperature sensor (contact temperature sensor)
- Plug for connecting the heating circuit pump and the mixer motor
- Power cable (3.0 m long) with plug
- BUS cable (3.0 m long) with plug

Mixer PCB



Specification

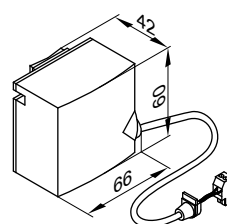
Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	1.5 W
IP rating	IP 20D to EN 60529 ensure through appropriate design/installation

Safety category

I

Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–20 to +65 °C
Rated relay output breaking capacity	
Heating circuit pump	2(1) A 230 V~
Mixer motor	0.1 A 230 V~
Required runtime of the mixer motor for 90 ° <	approx. 120 s

Flow temperature sensor (contact temperature sensor)



Secured with a tie.

Specification

Lead length	5.8 m, fully wired
IP rating	IP 32D to EN 60529 ensure through appropriate design/installation
Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +120 °C
– during storage and transport	–20 to +70 °C

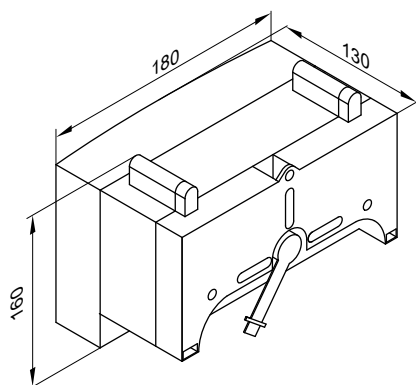
Extension kit for one heating circuit with mixer in conjunction with Divicon heating circuit distributor

Part no. 7424 958

Components:

- Mixer PCB with mixer motor
- Flow temperature sensor (immersion sensor for installation in the Divicon)
- Connection plug for heating circuit pump, power supply, flow temperature sensor and KM BUS connection

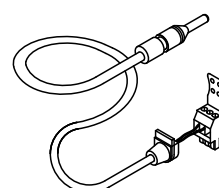
Mixer PCB



Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	5.5 W
IP rating	IP 32 D to EN 60 529, ensure through appropriate design/installation
Protection class	I
Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–20 to +65 °C
Rated relay output breaking capacity	
Heating circuit pump	2(1) A 230 V~
Runtime for 90 ° <	approx. 120 s

Flow temperature sensor (immersion sensor)



Control units (cont.)

Specification

Lead length	0.9 m, fully wired	Sensor type	Viessmann NTC, 10 kΩ at 25 °C
IP rating	IP 32 to EN 60529; ensure through appropriate design and installation	Permissible ambient temperature	
		– during operation	0 to +120 °C
		– during storage and transport	–20 to +70 °C

Vitotronic 300-K extension for heating circuits with mixers 2 and 3

Part no. 7164 403

PCB for installation in the Vitotronic 300-K, type MW2B.

For controlling two heating circuits with mixers.

- With connections for mixer motors, flow temperature sensors (NTC 10 kΩ) and heating circuit pumps.
- Plug for mixer motor and heating circuit pump for each heating circuit.

Extension kit for one heating circuit with mixer for the Vitotronic 300-K

Part no. 7441 998

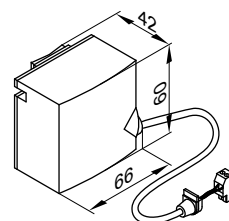
Components:

- Mixer motor
- Flow temperature sensor (contact temperature sensor), lead length 5.8 m, fully wired
- Plug for connecting the heating circuit pump
- Mixer motor terminals
- Connecting cable (4.0 m long)

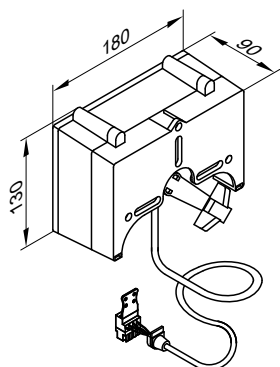
The mixer motor is mounted directly onto the mixer DN 20 to 50 or R ½ to 1¼.

Permissible ambient temperature	
– during operation	0 to +40 °C
– during storage and transport	–20 to +65 °C
Torque	3 Nm
Runtime for 90 ° <	120 s

Flow temperature sensor (contact sensor)



Mixer motor



Secured with a tie.

Specification

IP rating	IP 32D to EN 60529 ensure through design/installation
Sensor type	Viessmann NTC, 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +120 °C
– during storage and transport	–20 to +70 °C

Mixer motors

See datasheet "Control unit accessories".

Specification, extension kit

Rated voltage	230 V~
Rated frequency	50 Hz
Power consumption	2.5 W
Safety category	I
IP rating	IP 32D to EN 60529; ensure through design/ installation

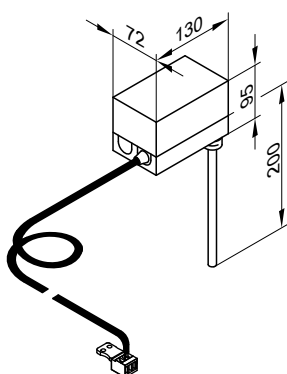
Immersion thermostat

Part no. 7151 728

May be used as a maximum temperature limiter for underfloor heating systems.

The temperature limiter is installed into the heating flow and switches the heating circuit pump OFF if the flow temperature is too high.

Control units (cont.)



Specification

Lead length	4.2 m, fully wired
Setting range	30 to 80 °C
Switching differential	max. 11 K
Breaking capacity	6(1.5) A 250 V~
Setting scale	inside the casing
Stainless steel sensor well	R ½" x 200 mm
DIN reg. no.	DIN TR 116807 or DIN TR 96808

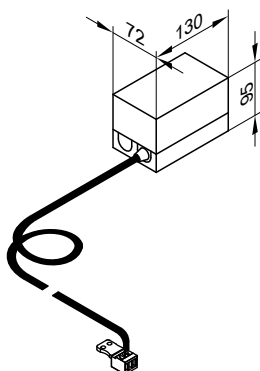
Contact thermostat

Part no. 7151 729

May be used as a maximum temperature limiter for underfloor heating systems (only in conjunction with metallic pipes).
The temperature limiter is installed into the heating flow and switches the heating circuit pump OFF if the flow temperature is too high.

Specification

Lead length	4.2 m, fully wired
Setting range	30 to 80 °C
Switching differential	max. 14 K
Breaking capacity	6(1.5) A 250V~
Setting scale	inside the casing
DIN reg. no.	DIN TR 116807 or DIN TR 96808



Immersion temperature sensor

Part no. 7179 488

To capture the low loss header temperature.

Specification

Lead length	3.75 m, fully wired
IP rating	IP 32
Sensor type	NTC 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +90 °C
– during storage and transport	–20 to +70 °C

Solar control module, type SM1

Part no. 7429 073

Specification

Construction

The solar control module contains:

- PCB
- Connection terminals
 - 4 sensors
 - Solar circuit pump
 - KM BUS
 - Power supply (on-site ON/OFF switch)
- PWM output for controlling the solar circuit pump
- 1 relay for switching a pump or a valve

Collector temperature sensor

For connection inside the appliance.

On-site extension of the connecting lead:

- 2-core lead, length up to 60 m with a cross-section of 1.5 mm² (copper)
- Never route this lead immediately next to 230/400 V cables

Lead length	2.5 m
IP rating	IP 32 to EN 60529; ensure through design/installation Viessmann NTC 20 kΩ at 25 °C
Sensor type	
Permissible ambient temperature	
– during operation	–20 to +200 °C
– during storage and transport	–20 to +70 °C

Control units (cont.)

Cylinder temperature sensor

For connection inside the appliance.

On-site extension of the power cable:

- 2-core lead, length up to 60 m with a cross-section of 1.5 mm² (copper)
- Never route this lead immediately next to 230/400 V cables

Lead length	3.75 m
IP rating	IP 32 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 kΩ at 25 °C
Permissible ambient temperature	
– during operation	0 to +90 °C
– during storage and transport	–20 to +70 °C

For systems with Viessmann DHW cylinders, the cylinder temperature sensor is installed in the threaded elbow (standard delivery or accessory for the respective DHW cylinder) in the heating water return.

Functions

- Switching the solar circuit pump
- Electronic limiter for the temperature in the DHW cylinder (safety shutdown at 90 °C)
- Collector safety shutdown
- Central heating backup is controlled in conjunction with a multi mode heating water buffer cylinder
- The heating of two consumers is controlled via a collector array
- Switching an additional pump or valve via relay
- Second temperature differential control or thermostat function
- Solar circuit pump speed control via wave pack control or solar circuit pump with PWM input (Grundfos)
- Suppression of DHW cylinder reheating by the boiler (auxiliary function for DHW heating is possible)
- Suppression of reheating for central heating by the boiler with central heating backup
- Heating up of the solar-heated preheat stage (for DHW cylinders with a total capacity of ≥ 400 l)
- Output statement and diagnostic system

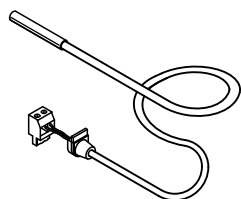
The immersion temperature sensor, part no. 7438 702 is required of the following functions should be realised:

- For DHW circulation diversion in systems with 2 DHW cylinders or
- for return changeover between the boiler and the heating water buffer cylinder or
- for heating additional consumers.

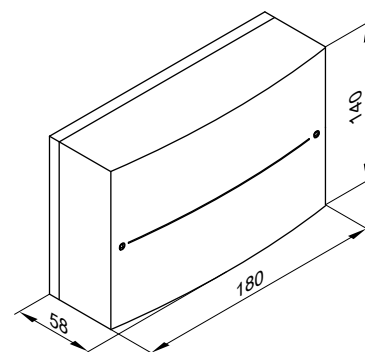
Immersion temperature sensor

Part no. 7438 702

To capture a temperature in a sensor well.



Specification



Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	1.5 W
Safety category	I
IP rating	IP 20 to EN 60529; ensure through design/installation
Function	Type 1B to EN 60730-1
Permissible ambient temperature	
– during operation	0 to +40 °C use in the living space or boiler room (standard ambient conditions)
– during storage and transport	–20 to +65 °C
Rated relay output breaking capacity	
– Semi-conductor relay 1	1 (1) A, 230 V~
– Relay 2	1 (1) A, 230 V~
– Total	max. 2 A

Specification

Lead length	5.8 m, fully wired
IP rating	IP 32 to EN 60529; ensure through design/installation
Sensor type	Viessmann NTC 10 kΩ, at 25 °C
Permissible ambient temperature	
– during operation	0 to +90 °C
– during storage and transport	–20 to +70 °C

LON communication module

PCB for data exchange with the Vitotronic 200-H, Vitocom 200 and for connecting to higher level building management systems.

- For installation in the Vitotronic 200
Part no. 7179 113
- For installation in the Vitotronic 300-K
Part no. 7172 174

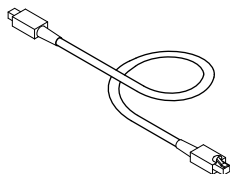
Control units (cont.)

LON connecting cable for data exchange between control units

Vitotronic 300-K for the Vitotronic 200-H

Cable length 7 m, fully wired.

Part no. 7143 495



Extension of the connecting cable

- Installation spacing 7 to 14 m:
 - 2 connecting cables (7.0 m long)
Part no. 7143 495
 - 1 LON coupling RJ45
Part no. 7143 496
- Installation distance 14 to 900 m with plug-in connectors:
 - 2 LON plug-in connectors
Part no. 7199 251
 - 2-core cable:
 - CAT5, screened
 - or
 - Solid conductor AWG 26-22 / 0.13 mm² - 0.32 mm²,
 - Conductor AWG 26-22 / 0.14 mm² - 0.36 mm²
 - Ø 4.5 mm - 8 mm
 - on-site**
- Installation distance 14 to 900 m with junction boxes:
 - 2 connecting cables (7.0 m long)
Part no. 7143 495
 - 2-core cable:
 - CAT5, screened
 - or
 - Solid conductor AWG 26-22 / 0.13 mm² - 0.32 mm²,
 - Conductor AWG 26-22 / 0.14 mm² - 0.36 mm²
 - Ø 4.5 mm - 8 mm
 - on-site**
 - 2 LON sockets RJ45, CAT6
Part no. 7171 784

Terminator (2 pce)

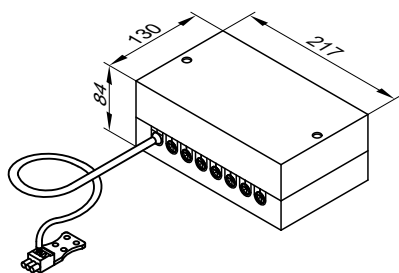
Part no. 7143 497

To terminate the LON BUS at the first and last control unit.

KM BUS distributor

Part no. 7415 028

For the connection of 2 to 9 devices to the Vitotronic KM BUS.



Specification

Lead length
Protection

3.0 m, fully wired
IP 32 to EN 60529;
safeguard through appropriate design and installation

Permissible ambient temperature

- during operation
- during storage and transport

0 to +40 °C
-20 to +65 °C

5822 432 GB

Control units (cont.)

Internal extension H1

Part no. 7179 057

PCB for installation in the control unit.

Using the extension allows the following functions to be achieved:

Function	Rated breaking capacity of the relay output
– Connection of an external safety solenoid valve (LPG)	1(0.5) A 250 V~
and one of the following functions:	2(1) A 250 V~
– Connection of a heating circuit pump (stepped) for a directly connected heating circuit	
– Connection of a central fault message	
– Connection of a circulation pump for cylinder heating	
– Only with the Vitotronic 200, type HO1B:	
– Connection of a DHW circulation pump	

Specification

Rated voltage	230 V~
Rated frequency	50 Hz

Internal extension H2

Part no. 7179 144

PCB for installation in the control unit.

Using the extension allows the following functions to be achieved:

Function	Rated breaking capacity of the relay output
– External extractor interlock	6(3) A 250 V~
and one of the following functions:	2(1) A 250 V~
– Connection of a heating circuit pump (stepped) for a directly connected heating circuit	
– Connection of a central fault message	
– Connection of a circulation pump for cylinder heating	
– Only with the Vitotronic 200, type HO1B:	
– Connection of a DHW circulation pump	

Specification

Rated voltage	230 V~
Rated frequency	50 Hz

Extension AM1

Part no. 7452 092

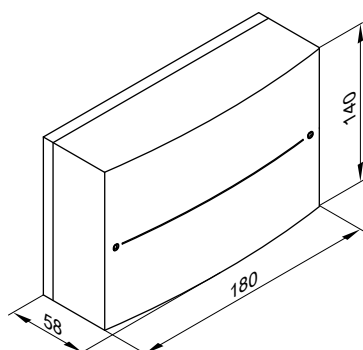
Function extension inside the casing for wall mounting.

Using the extension allows up to two of the following functions to be achieved:

- Switching the DHW circulation pump (only with the Vitotronic 200, type HO1B)
- Switching the heating circuit pump for a directly connected heating circuit
- Switching the circulation pump for cylinder heating (not for boilers with integral DHW cylinder)

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	4 A
Power consumption	4 W
Rated relay output breaking capacity	each 2(1) A 250 V~ total max. 4 A~
Safety category	I
IP rating	IP 20 D to EN 60529 ensure through appropriate design/installation
Permissible ambient temperature	0 to +40 °C
– during operation	Installation in living spaces or boiler rooms (standard ambient conditions)
– during storage and transport	–20 to +65 °C



Control units (cont.)

Extension EA1

Part no. 7452 091

Function extension inside the casing for wall mounting.

Using the inputs and outputs allows up to 5 functions to be achieved:

1 switching output (floating changeover contact)

- Central fault message issue (only with the Vitotronic 100, type HC1B and Vitotronic 200, type HO1B)
- Switching a feed pump to a substation
- Switching the DHW circulation pump (only with the Vitotronic 200, type HO1B)

1 analogue input (0 to 10 V)

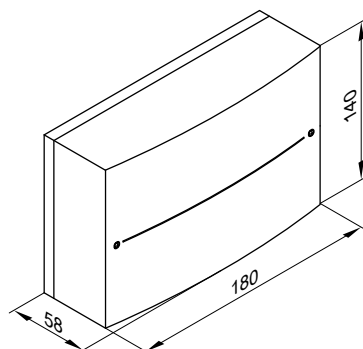
- Set boiler water temperature default

3 digital inputs

- External heating program changeover for 1 to 3 heating circuits (only with the Vitotronic 200, type HO1B, and the Vitotronic 300-K, type MW2B)
- External blocking
- External blocking with central fault message
- Minimum boiler water temperature demand
- Fault messages
- Short term operation DHW circulation pump (only with the Vitotronic 200, type HO1B, and Vitotronic 300-K, type MW2B)
- Signalling reduced operation for one heating circuit (only for the Vitotronic 300-K, type MW2B)

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	4 W
Rated breaking capacity of the relay output	2(1) A 250 V~
Safety category	I
IP rating	IP 20 D to EN 60529 ensure through appropriate design/installation
Permissible ambient temperature – during operation	0 to +40°C Installation in living spaces or boiler rooms (standard ambient conditions)
– during storage and transport	–20 to +65 °C



Appendix

6.1 Regulations / Directives

Regulations and Directives

The design and operational characteristics of the Vitodens gas condensing boilers from Viessmann meet the requirements of EN 297. They are CE-designated.

They may be installed in sealed unvented heating systems with permissible flow temperatures (= safety temperatures) up to 100 °C to EN 12828. The maximum achievable flow temperature is approx. 15 K below the safety temperature.

Observe all standards and guidelines applicable to the installation and operation of this system in your country.

Only qualified contractors must carry out the installation, the mains gas and flue gas connections, the commissioning, the electrical connection as well as general maintenance and repair work.

The installation of a condensing boiler may need to be notified to and approved by your local gas supply utility.

In some regions, permits may be required for the flue system and condensate drain into the public sewage system.

In some countries, the relevant flue gas inspector and water authorities must be informed prior to commencing the installation.

We recommend that you carry out maintenance and cleaning procedures annually. As part of the maintenance procedure, check the correct function of the entire system. Remedy any faults.

Condensing boilers must only be operated with specially designed, tested and approved flue pipes.

Only recognised contractors may convert this boiler for use in countries other than those stated on the type plate. That contractor must also arrange approval in accordance with the statutes of that country.

Appendix (cont.)

EnEV	Energy Saving Ordinance
1st BImSchV	First regulation for the implementation of the German Immissions Act (regulation regarding small and medium-sized combustion equipment)
FeuVo	Fire Regulations of the German Federal States
DIN 1986	Materials for drainage system
DIN 1988	DHW pipe systems on properties
DIN 4753	Water heaters and DHW systems for DHW and process water
DIN 18160	Domestic chimneys
DIN 18380	Heating systems and central DHW heating systems (VOB)
DIN 57116	Electrical equipment for combustion systems
EN 677	Gas condensing boiler
EN 12828	Heating systems in buildings – design of hot water heating systems
EN 12831	Heating systems in buildings – process for calculating the standard heat load
EN 13384	Flue systems – thermal and flow calculations
ATV-DVWK-A 251	Introduction of condensate from gas and oil combustion systems [into public sewers]
DVGW G 260	Gas quality
DVGW G 600	Technical rules for gas installations (TRGI)
DVGW G 688	Gas consumption equipment, condensing technology
DVGW/DVFG	Technical rules for LPG (TRF)
DVGW VP 113	Systems comprising combustion equipment and flues
VDI 2035	Guidelines for the prevention of losses through corrosion and scaling in hot water heating systems
VdTÜV 1466	Water quality datasheet
VDE regulations and the special regulations of local power supply utilities.	

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Subject to technical modifications.

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